JOURNAL

OF THE

ASIATIC SOCIETY.

Of the early History of Sindh, from the "Chuch Namuh" *and other authorities. By* Lieut. Postans, *Assist. Pol. Agent, Shikarpore.*

[My able correspondent, Lieut. Postans, has been for some time perseveringly employed in tracing out whatever material is available in *Sindh*, for the purpose of throwing light upon its early history. A book called the "*Chuch Namuh*," is the principal authority to which he has had recourse in preparing the historical sketch, which he has enabled me to have the satisfaction of publishing. Both he and Capt. Hart (2d Grenadiers, Bombay army) who has been turning his attention to similar pursuits, despair of discovering any more authentic work bearing upon the early history of *Sindh*, and agree in describing the modern *Sindhees* as so illiterate and apathetic, as neither to have the will, nor the power to further their researches. I still, however, do not despair of the recovery of other authorities, as the country becomes better known to us.

In the mean time, Lieut. Postans has ably and successfully availed himself of all the material at his disposal, which, dating from the Mussulman inroads, may be fairly considered as authentic. The short notice of the history of *Sindh* before that period, to be found in the works of Mussulman authors, must be necessarily in many respects of a traditional character, and we indeed find, that the *Chuch Namuh* does not attempt to do more than describe the revolution which destroyed the ancient Sindian dynasty in the century immediately preceding the Islamite invasion. The use of the modern Persian name *Bruhmanabad*, as applied to a city in the days of *Chuch*, gives sufficient proof of the loose manner in which the Mussulman historian collected his material; he was perhaps, in the spirit of a genuine Moslem, careless of all respecting the infidel inhabitants of the land, which was not in some way immediately connected with the advent of his own people.

We are not the less bound to acknowledge our obligations to Lieut. Postans, for having undertaken the task of laying, compendiously, before an English reader, the first historical notice of *Sindh*, which has I believe appeared unconnected with the history of other lands and peoples.]

CHAPTER I.

Sindh—its situation—climate—name whence derived—early history—capital *Alor*—extent of territory—rule of the *Rahees*—appearance of the first Brahmin *Chuch*—his reign and death—his son *Dahir*—account of his rule until the Mahomedan invasion.

Sindh is one of the sixty-one climates of the world; it is situated in the five first climates, belonging chiefly to the second, and is in the same region as the holy cities of *Mecca* and *Medina*. The river of *Sindh* rises in the mountains of *Cashmeer*; another joins it from the mountains of *Cabool* in *Mooltan*; it is met by the river *Sehoon*, and thus proceeds to the sea. Its water is clear, bright, and cool during the hot season; in the language of the country, it is called *Mehran*. All the rivers of *Sindh* flow towards the south, where they empty themselves into the sea, (such as the waters of *Peelab*, *Chenab*, *Lahore*, *Sultanpoor*, and *Bajuwarrah*.) The climate of *Sindh* is delightful; its mornings and evenings cool, the country to the north hot, whilst that to the south is cold. Its inhabitants intelligent, and of large stature. *Sindh* is so called from *Sindh*, the brother of *Hind*, the son of *Noah*, whose descendants from one generation to another ruled in that country; from them also sprang numerous tribes, such as the *Nubeteh*, the men of *Tak*, and the tribe of *Moomeed*, who governed and possessed it by turns; no record remains of these, and its history commences with the last of the dynasty of the *Rāhees*, or *Rajahs*, whose capital city and seat of government was *Alor*. *Alor* is described as a large, flourishing, and populous city, situated on the banks of the river *Mehran*, possessing large edifices; its gardens highly cultivated, producing every kind of tree and fruit, where travellers had all their wants supplied.

Sindh, its situation according to Eastern Geography.

Climate.

Name whence derived.

Early History.

Capital *Alor*.

This territory extended to the east as far as *Cashmeer* and *Kunooj*; west to *Mukran* and the sea; south to the territories of the ports of *Surat* and *Deo*; and to the north to

Extent of Territory.

Kandahar, *Seestan*, and the mountains of *Soolleemany*, *Girwān*, and *Rynakan*. The first *Rahee* mentioned, is *Rahee Dewahey*; he was a powerful prince, possessing absolute authority over the territory of *Sindh*, as above-mentioned, and formed alliances with many of the rulers in *Hind*; at his death, he was succeeded by his son *Rahee Siheersin*; he by his son *Rahee Sahursee*; and he by his son *Rahee Siheersin* the 2nd. During this reign, the king of Persia, *Ueem Roz*, sent a force by the road of *Kirman* to *Mukran* and *Reech*, which countries they laid waste, and *Rahee Siheersin*, in trying to repel this invasion, was defeated, and he himself killed by an arrow through the neck; his troops fled to *Alor*, and his son *Rahee Sahee* was seated upon the throne. During the *Rahee Sahee's* reign, the Brahmin *Chuch*, (who afterwards possessed the country, and bequeathed it to his son,) made his appearance. It is related, that *Rahee Sahee's* minister *Ram Rao*, was a man of such capability, and so well directed the affairs of state, that the *Rahee* himself seldom interfered with them, but passed the greatest part of his time in the sensual enjoyments of his harem. Accident brought *Ram Rao* and the Brahmin *Chuch* together; the latter is described as having been a very talented and eloquent man, well versed in all the learning of the Hindoos. *Ram Rao* appreciating his abilities made him his deputy, and on one occasion sent him on some affairs, which required the *Rahee's* attention, to the door of the harem: the sanctity of *Chuch's* priestly office admitted of his being allowed to enter the private apartments without the formality of a curtain between him and its inmates, and so great was his personal beauty, that the *Ranee* became enamoured of him at first sight; she afterwards made *Chuch* acquainted with her passion, but he declined her overtures, on the score of his being a Brahmin, and as such, incapable of treachery to the *Rahee*, whose confidence he had gained. But an opportunity soon presented itself to the *Ranee* for the accomplishment of her designs. The talents of *Chuch* had given him almost universal sway over the affairs of government, and the minister *Ram Rao* was no longer thought of; in the mean time the *Rahee* became dangerously ill, and the *Ranee* formed a plot, by which, in the event of the *Rahee's* death, *Chuch* should succeed to the throne of *Sindh*. She caused a proclama-

Rule of the Rahees.

The Brahmin *Chuch*.

tion to be issued in the name of the *Rahee*, for a general assembly of all ranks and classes, and placed the throne in the public hall of audience. When the people were assembled, they were informed that the *Rahee's* health prevented his then being present, or any longer attending to the affairs of his country, but that he had given his signet, and delegated absolute authority to the Brahmin *Chuch*, whom they were to obey as his deputy. *Chuch* was thus vested with power, and his ability secured him the obedience of the subjects; the *Rahee* afterwards died, leaving no children; *Chuch* married the *Ranee*, and by universal consent was placed upon the throne. The government of five preceding *Rahees* occupied 137 years. *Chuch* was the first Brahmin who ruled. Many of the relations of the deceased *Rahee*, who possessed claims to the government of the country, were inveigled by the *Ranee* into the palace, and murdered. *Chuch* opened the doors of his treasury, and by his bounty secured the good offices of the soldiers, and of his subjects generally. He had scarcely however imagined himself secure on the throne, when *Rana Mihrut Chittooree*, heading the remainder of the relations of *Rahee Sahee*, came with an army from Joudpoor and Chittoor to assert their claims to the throne. The *Ranee* urged *Chuch* to prepare to defend his possessions; he again propitiated the troops by large presents in money, and prepared to meet *Rana Mihrut*. The forces drew up for battle, in the vicinity of *Alor*, but *Rana Mihrut* advancing in front of his host, challenged *Chuch* to single combat, as the most merciful way of settling a dispute, in which the two chiefs only were immediately concerned. The result of the combat was decided to be final as to all claims of territory; and whoever fell, his country was to pass to the possession of the victor. *Chuch* consented to this; the two chiefs advanced in front of their armies; *Chuch* directing his servant to bring his horse slowly after him, mounted quickly, and treacherously slew *Rana Mihrut* with one blow of his sword. The troops of the latter witnessing the fall of their leader, fled in dismay; *Chuch* pursued and killed many of the fugitives; he then returned with great pomp to *Alor*, the houses and bazars of which city were ornamented upon the occasion. His authority was now established, and he became a powerful king. After a reign of 40 years he died, leaving two sons; the eldest *Dahir*, and the younger *Dihir*; he had also one daughter. His eldest

Reign of *Chuch*, until his death.

son *Dahir* succeeded to the throne, and his brother *Dihir* was appointed governor of *Burhamanabad.* He made a tour of his dominions, and after a treaty of peace with the governor of *Kirman*, returned to *Alor.* When he had for some time occupied himself in adjusting and arranging the affairs of his country, he consulted the astrologers as to his future fate, and that of his dominions ; they told him that neither in his own, nor in his brother's horoscopes could they discover any evil sign, but that in his sister's it was written, that whomsoever she married, should possess the country of *Sindh ;* this sorely perplexed *Dahir*, who finding the thought of his losing power and empire too intolerable to bear, determined to confound the fates, and avert the evil threatened, by marrying his own sister ; his subjects and those about him tried in vain to dissuade him from so unnatural a proceeding, but his superstition was insurmountable, and with all the forms of his religion he married her.*

Dahir, the son of *Chuch*—his reign.

When his brother *Dihir* heard this, he was sorely incensed, and wrote a letter full of bitter reproaches to *Dahir*, for the disgrace which he had brought upon his family, adjuring him to make all the reparation in his power, by breaking off so unholy an alliance.

Dahir's infatuation would not admit of this, and he excused himself by assuring his brother, that beyond the mere ceremonies of marriage he had committed no sin.† *Dihir* determined to punish his brother, and with this intent collected a large force at *Burhamanabad*, with which he marched upon *Alor*, and encamped under the walls of the city ; through the intervention of the mother, peace was concluded between the brothers, and *Dihir* died shortly afterwards of small pox, in the city of *Alor.* *Dahir* proceeded to *Burhamanabad*, and having appointed another deputy to govern it returned to *Alor*, where he busied himself in completing the fortifications, which his father *Chuch* had begun. His

* Capt. Hart in a letter to me quoted, in No. 108 (p. 1216 of vol. ix. Asiatic Society's Jour.) mentions the remains of an ancient city in *Upper Sindh*, called by the country people "Dumb-i-Dilora-Shah," traditionally said to have been destroyed on account of the king having married his sister. He referred me then to the "*Chuch Namuh.*" The tradition refers doubtless to the "Alor," of the history, making it however the name of the king instead of the city, and to the story of *Dahir.*

† It is but just to add, that in all the manuscripts from which this sketch is compiled, *Dahir* is particularly represented as not having added the crime of incest to his other follies.

dominions were prosperous, and his sovereignty firmly established; he made a tour to the East as far as *Cashmeer*, upon the boundaries of which country he planted two trees as memorials of his journey. The flourishing state of the country, and the growing power of *Dahir*, excited the envy of the *Rajahs* of *Hind*, and they instigated and supported *Runmul*, governor of *Kunooj*, in collecting a large force to descend upon *Sindh*. *Runmul* marched to the neighbourhood of *Alor*; *Dahir* called in the assistance of Arab mercenaries, and sought advice as to the best method of repelling the invasion, from *Mahamed Ullafee*, who directed him to dig a ditch in front of his army, one furlong in length, and to cover it over with grass, &c. *Mahomed Ullafee* at the head of about 5000 men, Arabs and Sindians, made a night attack upon the enemy's camp, then feigning a retreat, led them to the ditch, into which they fell, and were for the greatest part slaughtered; he took many prisoners, (80,000 men and 50 elephants.) After this victory the power of *Dahir* was more than ever firmly established; he ruled with pride and prosperity for twenty-five years, when his kingdom began to decline.

CHAPTER II.

Reason of sending the army of the Faithful to *Sindh*—*Buzeel* killed—*Bin Cassim* appointed to command the army—arrives at *Deebul*—takes that place as well as *Nierunkote*—the governor of *Moostan* surrenders—*Hijjaj Bin Sookufie* urges *Bin Cassim* to attack *Alor*—the tribe of *Chunch* proffers their allegiance—the fort of *Rawur* taken.

Reason of sending the army of the Faithful to Sindh.

The king of Ceylon, *Serundeep*, sent some servants to the *Khalif* of *Bagdad*, (*Abdool Mulk*,) with presents of female slaves, and other merchandize; the boat which conveyed them, was driven into the port of *Deebul*, (now called *Tattah* and *Lahuny*,) where they were attacked and robbed by a predatory tribe, (the *Nukamrehs*,) some were killed, the rest imprisoned. When the news of this outrage reached *Hijjaj Bin Yusuf Sookufie*, minister of *Abdool Mulk*, he instigated that prince to send an army to *Sindh*, to retaliate upon the infidels, and to release the faithful; at the same time he wrote a letter to the *Rajah Dahir*, for some explanation of the circumstances. *Dahir* disclaimed any participation in the affair,

or any authority over the robbers who had committed it. *Hijjaj* gained the *Khalif's* permission to send an officer named *Buzeel* to *Mukran*, where he was instructed to levy troops, and attack *Sindh*. *Dahir* sent his son *Jaiseh*, who defeated *Buzeel's* forces, killed him, and took many prisoners. In the mean time the *Khalif* died, and was succeeded by his son *Wulleed*, (*Bin Abdoul Mulk*); *Hijjaj* urged him to renew the war, and to send a force under *Mahomed Bin Cassim*, (a cousin of *Hijjaj*,) to release the faithful, and punish the unbelievers, as his father, the former *Khalif*, had intended to have done. The *Khalif Wulleed* gave the necessary orders to *Hijjaj* for the preparation and equipment of a force from the public treasury. In one month he collected an army of 15,000 men, 6,000 of whom were horse, 6000 mounted on camels, and 3,000 foot, with 30,000 dinars for expenses; five catapultas for levelling forts were dispatched in boats. *Bin Cassim* marched, and arrived at the fort of *Deehul*, to conquer *Sindh*, in the year 92 H. (A. D. 710.) *Jaiseh*, the son of *Dahir*, was at that time governor of the fort of *Nierunkote*,* and sent intelligence of the arrival of the Mahomedan army to his father at *Alor*; *Dahir* asked advice of the *Ullafees*, (a tribe which he had sheltered after an outrage which they had committed on some of the deputies of *Hijjaj*); they counselled him to avoid meeting the powerful army of *Bin Cassim*, and to entrench himself in the fort of *Alor*. *Bin Cassim* took the fort of *Deebul*, in which was a large Hindoo temple, so sacred,† that it was supposed to act as a talisman, and to prevent the capture of the fort. *Bin Cassim* threw it down with a catapulta, destroyed the temples of the idolaters, building *musjeeds* on their sites, released the prisoners of the Faithful who were confined there, and putting his material on board boats, proceeded to *Nierunkote*. After a difficult journey of seven days, the roads being blockaded by the *Sindians*, and the troops of *Bin Cassim's* army suffering much from drought, owing to the river not swelling,‡ the army of the Faithful arrived before the fort of *Nierunkote*, the governor of which was *Sumnee*, who had succeeded the son of *Dahir* (*Jaiseh*,) in consequence of the

Buzeel killed.

H. 92 A. D. 710.

Bin Cassim appointed to command the army.

Arrives at *Deebul*.

Takes *Deebul*.

* Near the modern city of *Hyderabad*, see Capt. McMurdo's paper on *Sindh*.

† Hence its name from the Hindoo, for a temple, *Deebul* or *Deewul*.

‡ The Mahomedan army joined in prayer for relief from this calamity; their supplications were answered by a plentiful fall of rain and a swell of the river.

latter being sent to the more important command of *Burhamanabad.* The Mahomedans began to suffer much from want of supplies, but after a short siege, the governor *Sumnee* surrendered the keys of the fort on condition of quarter to the garrison. *Bin Cassim* entered the fort, destroyed the temples, built *musjeeds* and *minarets* in their stead, and appointed keepers and *mouzzins* to the same; he left magistrates to preserve his authority at *Neirunkote,* and taking the governor *Sumnee* with him, proceeded onwards. This last wrote to the governor of the fort of *Moostan, Bucherim Chunder,* advising him to submit to the invaders, as they were too powerful to oppose. *Bucherim's* fidelity however was unshaken, but after a week's siege, he was obliged to abandon the fort, and flee to *Seem,* of which place *Boodeh* was governor. *Bin Cassim* took possession of the fort of *Moostan,* and having made arrangements for its government, proceeded to *Seem,* where he found *Bucherim Chunder* and *Boodeh* prepared to oppose him. The infidels failed in a night attack upon the camp of the Faithful; and *Kakeh, Boodeh's* father, foreseeing that the time was arrived when the country of *Sindh* must submit to the Mahomedan arms, came to *Bin Cassim* to intreat for quarter for his son, and the whole garrison of *Seem*—it was granted. *Bin Cassim* took possession of *Seem,* and leaving *Abdool Mulk* to settle the affairs of that place, pursued his march, daily adding fresh conquests to the arms of the Faithful; he took the forts of *Buhultoor, Kundabuh,* (*? Gundava,*) and *Mussaloj,* from all of which he exacted tribute, leaving troops to retain the new possessions thus acquired. At this time a letter reached *Bin Cassim* from *Hijjaj,* ordering him to *Neirunkote,* to cross the river, and prepare to expel the *Rajah Dahir* from the capital of the country *Alor.* The large and powerful tribe of *Chuch* proffered obedience to *Bin Cassim*; it is also related that they embraced *Islamism,* and were the first inhabitants of *Sindh* who did so. In obedience to the instructions of *Hijjaj, Bin Cassim* proceeded to the fort of *Rawur,* which he summoned to surrender; the governor *Mokeh Bin Bussayeh* made a feint to resist, being afraid of the wrath of *Dahir,* but ultimately surrendered the fort, and with the garrison promised obedience to *Bin Cassim.*

Takes Neirunkote.

Takes Moostan.

Hijjaj urges *Bin Cassim* to attack *Alor.*

CHAPTER III.

Dahir alarmed at the successes which attend *Bin Cassim,* exerts himself to prevent his crossing the *Meheran*—the Mahomedans suffer from famine—*Dahir* offers terms—not accepted—*Hijjaj* sends horses and supplies to *Bin Cassim,* who passes the river—*Dahir's* consternation—comes out from *Alor* with a large army—account of his death, and the defeat of his forces—the Mahomedans enter the capital *Alor.*

Dahir alarmed at the successes of *Bin Cassim.*

The successes which attended the army of *Bin Cassim,* began to terrify the *Rajah Dahir* for the safety of his capital and dominions, and he foresaw that if the Mahomedans effected the passage of the river, the fate of his sovereignty was sealed. He collected an army of the *Koordans,*

Opposes the passage of the *Mehran.*

and arriving at the opposite bank, employed himself in obstructing the passage of *Bin Cassim;* this duty he afterwards delegated to *Jah Humeen,* and he himself returned to *Alor. Jah Humeen* performed his part so well, aided by the *Rajah's* son, *Jaisch,* (who cut off the supplies of the Mahomedans,) that these latter began to suffer all the misery and

Bin Cassim's army suffers from famine.

horrors of a famine; they were driven to slay their own horses for food; coupled with this, *Chund Ram Haleh,* the former governor of *Secoostan,* heading some insurgents, seized that fort from a small party of horse, who were left to govern its garrison. *Bin Cassim,* however, immediately dispatched *Muzhub Bin Abdul* with 1000 horse and 2000 infantry, who regained the fort, and took *Chund Ram* prisoner. *Dahir* thinking these mis-

Dahir offers terms, but not accepted.

fortunes would soon dispirit the Moslems, wrote to *Bin Cassim,* assuring him, that if he wished to withdraw his forces, he might do so in security; the latter answered, that he had no intention of retiring, until he had taken the capital *Alor,* and subjected *Sindh* and its dependencies to the Mahomedan rule. The intelligence of the difficulties encountered by *Bin Cassim,* and the loss of the passes, reaching *Hijjaj,*

Hijjaj finds supplies and horses.

he dispatched 1,000 others, with fresh supplies to *Bin Cassim,* urging him to lose no time in crossing the river, as the overthrow of *Dahir* was the first and most important step; on receiving this, *Bin Cassim* proceeded to *Juhum,* where with

the assistance of *Mokeh Bin Bussayeh*, he collected some boats, and filling them with sand and stones, commenced a bridge for the passage of his army; it was under many difficulties and obstructions at length completed; the first detachment of the Faithful passed the river under a shower of arrows from the infidels, who were collected in strength on the opposite bank; but these being driven back, the whole of the army of *Bin Cassim* passed without further molestation. It is reported that *Dahir's* rage on receiving the intelligence was so great, that he killed the messenger who was the bearer of it.

Bin Cassim crosses the rivers, notwithstanding *Dahir's* opposition.

Dahir's consternation.

Bin Cassim now exhorted his soldiers to firmness: "the river was in their rear, and the enemy in front, still if any were faint-hearted amongst them, then was the time to quit the army, and return to their own country." There were only three of the whole host who did so. *Bin Cassim* having thus secured the co-operation of his troops, proceeded onwards to *Jeyoor*, near which place he first caught a glimpse of *Dahir's* forces; he detached *Muhuzzin Bin Sabit Kiessee* with 2,000 men, and *Mahomed Zyad ul Huddee* with 1,000, to oppose them. In the mean time, *Dahir* called *Mahomed Haris Ullafee* to him, and said: "I have protected and promoted you; now is the time to requite my kindness, and to shew yourself worthy of my confidence." *Mahomed Haris* excused himself by saying, that he could not oppose the Moslems without being a renegade to the faith he professed. *Dahir* therefore deputed his son *Jaisch* to lead his army against *Bin Cassim;* he did so, but was defeated with great slaughter, and *Bin Cassim* advanced upon *Alor*, which he besieged.

Dahir comes out from *Alor* with a large army.

On the 10th of the month *Ramzan*, in the year ninety-three *Hejira*, *Rajah Dahir* determined to make one bold stroke for his crown and kingdom; came out from the city of *Alor* with an immense army; they say he had 30,000 infantry in advance of his cavalry and elephants; he himself seated on an elephant, the *howdah* of which was richly ornamented, passed to the right and left, animating the soldiers, and disposing his battalions in order of battle; seated in the same *howdah* were two beautiful female slaves, one administered wine, the other *pān* and *beetle-nut* to him. The battle which ensued is described as

terrific, lasting from morn till night. *Bin Cassim* himself fought as a common soldier with his troops, performing deeds of valour; but the day was decided in favour of the faithful. In consequence of the latter throwing fireworks amongst the Rajah's elephants the *howdahs* took fire, and the infuriated beasts rushed madly through their own troops, trampling down all before them until they arrived at the river, into the muddy banks of which they plunged. *Dahir's* elephant was amongst them, and the Mahomedans profiting by the confusion, threw showers of arrows, one of which struck *Dahir* in the neck, and killed him; his elephant sunk into the mud; and the Brahmins who were behind the *howdah*, took the body of the Rajah and buried it there. The infidels fled in all directions, and the carnage which ensued was dreadful; all the approaches to the citadel of *Alor* were most carefully blocked up, and the Brahmins and two female slaves fell into the hands of an officer of *Bin Cassim's* army, named *Keiss*, to whom they detailed the particulars of *Dahir's* death, and begged for quarter. *Keiss* took them to *Bin Cassim;* the body of *Dahir* was found in the mud of the river, and the head was severed from the body, and stuck upon a spear. That night the Moslems occupied themselves in prayers and thanksgivings for the victory they had gained. The next morning *Bin Cassim* caused the head of *Dahir*, together with the two slaves, to be placed over one of the gates of the city. *Dahir's* wife, *Ladee*, seeing this, threw herself from the walls, and the garrison being no longer able to offer any opposition, opened the gates of the fort. The army of the faithful entered and took possession of *Alor* on Friday, the 11th of Ramzan, in the 93rd year of the *Hejira*. *Dahir* ruled 33 years, and the rule of the Brahmins embraces a period of 92 years.

Dahir's death and the defeat of his army.

Mahomedans enter *Alor* 93 H. (A.D. 711.)

CHAPTER IV.

The tribe of *Soommah* and others pay homage to *Bin Cassim*—the rebellion of the sons of *Dahir*—governors appointed to the principal cities and provinces of *Sindh*—*Bin Cassim* extends his conquest as far east as *Cashmeer*—the story of his death—deputies of the Kings of *Ghuznein, Ghoor, and Delhi,* govern in some of the provinces of *Sindh*—origin and rule of the tribe of *Soomrah*—*Nasir-ud-deen Kibajeh*—his rule and death.

The whole of the rich booty of *Alor,* including the treasury and crown jewels fo *Dahir,* were collected and placed in charge of *Keiss,* to convey to the *Khalif* at *Sham.* The *Khalif* honoured and promoted *Keiss,* and wrote letters of approbation to *Bin Cassim* urging him at the same time to extend his conquest still further, until the whole of the countries which were dependencies of *Sindh,* should be subjugated and form part of the *Khalif's* territories.

Men of *Soommah* and others pay homage to *Bin Cassim.*

After the defeat and death of *Dahir,* the men of *Soommah* came with music and dancing to pay homage to *Bin Cassim*; he asked the reason of this, and they told him that it was their custom thus to greet a victorious chief. The *Lohanas, Battis,* men of *Suhateh, Koosejeh, Haleh,* &c. led on by *Ally Mahomed Bin Abdool Ruhmun Sulleetee,* with head and feet bare, also proffered their allegiance.

Rebellion of the sons of *Dahir.*

In the meantime the sons of *Dahir* entrenched themselves in the fort of *Sikunder,* where they determined to offer opposition to *Bin Cassim. Burhamanabad* having previously been taken, and its tax and tribute settled, *Bin Cassim* marched to besiege the fort of *Sikunder,* and to quell the rebellion of the sons of *Dahir, (Jaisch, Toofic,* and *Wukeeah)*; he reduced this place, and although the sons of *Dahir* were sometime before they would believe the death of their father, (even abusing their mother, who was sent to assure them of it, by calling her a *hár,* traitress, and one in league with the "slayers of cows,") a sorceress assured them that he was dead, whereupon they surrendered.

Governors appointed.

The capital city *Alor,* with all the principal provinces and cities of the country of *Sindh* having thus fallen to the Mahomedan arms, governors were appointed to the following places: *Uhnuf Bin Keiss* to *Alor,* with *Moossie Bin Yakoob* as Cazy; to *Burhamanabad, Widah Bin Ameed;* and to

Rawur, Tobeh Dārus. *Bin Cassim* then proceeded towards *Mooltan*, and on the road, at the fort of *Baheeah*, *Kulsur Bin Chunder* made obedience to him; after that, the fort of *Sukkeh* was taken, and *Utbeh Bin Tumhee* left there as governor. *Mooltan*, with all its strongholds and dependencies fell to *Bin Cassim*, who appointed *Khuzzaneh Bin Abdool Mulk* to the fort of *Mehpoor*, *Dawood Bin Nusserpoor* to *Mooltan*, and proceeded to *Debalpoor;* at this time he is reported to have had 50,000 horse and foot under his banners, independent of the regular army with which he invaded the country. Having taken possession of the countries to the east as far as *Cashmeer* and *Kunnooj*, he returned, having placed trustworthy governors and servants in all those places. At the time that *Keiss* was deputed to convey the treasure and booty captured at *Alor*, with the prisoners to the *Khalif* of *Sham*, amongst the latter were two daughters of *Dahir.** The *Khalif* consigned them to his *harem* until they should recover from the fatigues of travel, and be prepared for his service; their beauty was very great, and the *Khalif* was about to consign one to his bed, when she informed him that *Bin Cassim*, flushed with victory, had robbed them both of their virginity, and had kept them in his *harem* for three days; the *Khalif's* wrath at this knew no bounds, and he wrote an order with his own hand, informing his servants to seize *Bin Cassim*, to sow him up in a raw cow's hide, and send him to *Bagdad.* This order reached the chief at *Hadapoor*, and he desired the servants to obey the order of their tyrannical master; they did so, and in three days the brave *Bin Cassim* sunk under the torture. Tis body was conveyed to the *Khalif*, who exultingly shewed it to the two women, as a proof of his absolute power; and of the full measure of revenge which he had taken upon the innocent *Bin Cassim.* They confessed that the accusation was totally false; that they were solely actuated by revenge for the murder of their father, and the destruction of his kingdom. The wretched *Khalif* too late saw the injustice he had committed, and suffered the most poignant remorse; he caused the two women to be tied to horses, and dragged to death through the streets of *Bagdad. Bin Cassim* was buried at *Damascus.* At the time of *Bin Cassim's* death, *Bin Keiss*

Bin Cassim conquers as far as the country of *Cashmeer.*

Story of his death.

* Gispul Deo and Sooing Deo.

was governor of *Alor*, the other places being governed, as before-mentioned; five other governors, deputies of the *Khalif* of *Beni Oomhae*, governed *Sindh* successively, with little or no alteration in the state of affairs, until in the year 133 H. the power over that country passed to the *Khalifs* of the dynasty of *Beni Abbas*. The period of the rule of the deputies of the *Khalifs* of *Beni Oomhae* in *Sindh*, embraces a period of 40 years from its conquest in 93 to 133 H. (A. D. 750.)

Deputies from the *Khalifs* of *Beni Oomhae.*

Sindh continued to be a dependency of the *Khalifs* of the tribe of *Beni Abbas*, who sent many deputies to govern the country. The only circumstance noted as worthy of observation throughout their rule, is, that one of the governors named *Tumun*, who arrived from *Bagdad*, brought with him many Arabs, residents of *Samrah*, who remained in *Sindh*, and in the course of time, produced the powerful tribe called the *Soomrahs*. In the year H. 416 (A. D. 1025,) *Sooltan Mahmood Ghuzney* sent deputies to the country of *Sindh*, thus terminating the sovereignty of the tribe of *Beni Abbas*, after a period of 283 years. The men of *Soomrah* had for a period of nearly 100 years been powerful *zumindars*; but as they continued to pay tax and tribute, they will be hereafter treated of as rulers.

The deputies of the kings of *Ghuzneiny*, *Ghoor*, and *Delhi*, possessed many of the provinces of *Sindh*, and sent governors to them from the time of *Sooltan Mahmood Ghuzeiny*, until a man named *Soomrah*, of that tribe, during the reign of *Sooltan Abool Rusheed Ghuznein*, was by the *Soomrahs* placed upon the throne, about 446 H. (1054 A. D.) and ruled independently. According to some writers, this tribe were originally Arabs, from a place called *Samrah*; they became *zumindars* in *Sindh*, of some power, and after the departure of the tribe of *Beni Abbas*, their numbers increased; whilst the deputies of the kings of *Guzneiny*, *Ghoor*, and *Dehli* possessed portions of the country, the *Soomrahs* ruled independently.

Deputies of the kings of *Ghuznein*, *Ghoor*, and *Dehli*, possess some of the provinces in *Sindh.*

According to the author of the *Muntukhib-ul-Tuwareek*, *Sooltan Abool Rusheed* being of weak intellect, neglected his dominions, and the men of *Sindh* threw off his allegiance; and in the year 445 H. (1053 A. D.) placed a man of the tribe of *Soomrah*, named *Soomrah*, on the throne. He married the daughter of *Sad*, a *zumindar*, by whom he had *Bahoon-*

Origin and rule of the tribe of *Soomrah.*

kur, who succeeded his father, and died in the year 461 H. (A. D. 1068;) he left a son, *Deodah*, who ruled for 24 years, and died in the year 485 H. (1092 A. D.) After him *Sunkahar* reigned 15 years; *Huneef* 36 years; *Onmur* 46; *Deodah* II. 14 years; *Pustoo* 33; *Kezreh* 16; *Mahomeed Toor* 15; *Kuhereh* (unknown,) *Deodah* III. 14; *Tahee* 24; *Juneesur* 18; *Bahoonkur* II. 15; *Huffeef* 18; *Deodah* IV. 25; *Oomur Soomrah* 35; *Bahoonkur* III. 10; *Humeel* succeeded him; and being a tyrant and oppressor, was the cause of the downfall of the *Soomrah* dynasty. But according to others, this tribe was in *Sindh* altogether 550 years, as *zumindars* and rulers, and their overthrow by the men of *Soomah* was occasioned by the tyrannies of the governor *Humeel*, in the year of the *Hejira* 752 (A. D. 1351,) when their dynasty ceased.* Previous to this period, *Nasir-ud-deen Kubajeh* who was deputed at the time of *Shums-ud-deen Ooltumsh* of *Delhi*, governor of *Sindh*, about the year 610 H. (A. D. 1213,) declared himself independent. A force under *Jhingiz Khan* invaded the country. *Nasir-ad-deen* not being prepared to oppose them, entrenched himself in the fort of *Mooltan*, where he was besieged for forty days; but the besiegers were obliged to return unsuccessful. Many of the great men of *Khorassan*, *Ghoor*, and *Ghuznein* fleeing from the oppression of *Jinghiz Khan*, came to *Nasir-ud-deen* at *Mooltan*.

Nasir-ud-deen Kubajeh, his rule and death.

In the year 611 H. (1214 A. D.) *Mulck Khan Khuljee* made an incursion upon *Seeostan*. *Nasir-ud-deen* marched to oppose him; the army of *Mulck Khuljee* was defeated, and he himself killed.

In the year 622 H. (1225 A. D.) *Shums-ud-deen* took an army to *Oochch*, to overthrow *Nasir-ud-deen*, who had entrenched himself at *Bukkur*; to this place *Shums-ud-deen* detached *Nizam-ul-Moolk*; but *Nasir-ud-deen* in attempting to escape from *Bukkur*, took boat, which foundering in a storm, he was drowned.

His death.

* The rule of the tribe of *Soomrah* in *Sindh* is far from being clearly made; but in the manuscripts consulted in this sketch, the authors confess their want of authentic record, and *Meer Massoom*, after a very unsatisfactory account, closes it by saying: "If any of my friends know more on this subject, let them publish it; I have said all I can upon the matter." Nor is the author of the *Soofut-al-Kiram* more explicit; (vide his contradictory statements); but it is generally received, that from the date of sending *Nasir-ud-deen* to *Sindh*, until the rule of the *Soomas*, (about 200 years,) *Sindh* was annexed to *Delhi*.

(To be Continued.)

Geological Report on the Valley of the Spiti, and of the Route from Kotghur. By Capt, Hutton, 37*th N. I.*

[The paper now published, completes a series of notes of a journey to the Spiti Valley, undertaken on account of the Asiatic Society, by Capt. Hutton, 37th Regt. N. I. It was with those which have already appeared placed at the disposal of the Editor of this Journal by the Committee of Papers. The results of the author's geological observations have induced the adoption of theories, upon which the Editor is only competent to remark in so far as the identification of the opinions of a publisher is concerned with those of any writer, to whom he is enabled to offer a medium of communicating his views to the public.

In the belief that hardly any novel theory could be broached, which would be unproductive of good results, (if not by its intrinsic merits, at any rate by the consequence of the discussion it might excite,) the Editor has great pleasure in giving publicity to this paper, for the views contained in which the author is alone answerable.]

The valley of the Sutledge is that portion of the western Himalya which, as its name implies, forms the tract of country through which the river Sutledge flows.

The term *valley* is however scarcely applicable to it, since it is strictly speaking nothing more than a deep and rugged mountain glen, of more than ordinary sternness and magnificence, often affording from the abrupt rise of its rocky sides, a mere channel for the roaring torrent which winds its irresistible and headlong course along its sheltered bed.

On either side rise high and snow-clad peaks, forming along the river's course two mighty walls, whose dark and furrowed sides proclaim the constant warfare which is waged by frost and heat alternately.

Villages are numerous along the river's course, sometimes placed near the water's level, at others raised high above it on the mountain's side, surrounded by their cultivation cut in steppes, and sheltered by the stern and frowning cliffs which raise their hoary summit far above it.

In the lower part of the valley, commencing from Rampore downwards, to below Kotgurh, vast beds of rolled and water-worn stones are seen accumulated on the river's banks, and rising high above the water's present level. Such deposits evidently owe their origin to the eddies or back waters of some far mightier stream than that exhibited by the Sutledge in the present day, even at its greatest height, and must undoubtedly have been formed by the rush of water attendant on the outburst of some enormous lake or *lakes* in the higher portions of the hills.

These deposits extend in many places along both banks of the river, and appear to have been formerly one solid mass of debris, which as the waters gradually disappeared, have become divided by the current of the stream.

These are for the most part situated at those places where the Sutledge takes a rapid turn, and have been evidently thrown up *within* the elbow by the eddies, or back waters.

On the surface of these broad and flat alluvial deposits, now flourishes an abundant cultivation, consisting of barley, wheat, rice, tobacco, poppies, &c. which being situated high above the river's level, are irrigated by the minor streams, which are furnished from the heights above them.

Higher up the river's course the valley narrows, and forming in many parts a mural cliff on either bank, gives a mere passage to the foaming stream, which rushes with a hoarse and deafening roar over the boulders which obstruct its progress, and dash its waters in muddy waves on high. Some hundred feet above the stream the hills are clothed with dense and stately woods of oaks and various sorts of pines, among which the "Ree," producing the edible seed called by the people "Neoza," is in great abundance. Above the belt of wood, are seen to rise huge rocky spires, along the rugged line of mountains, bare of all vegetation, and crowned by everlasting snows. From these snow-clad heights are furnished numerous streams, which rushing downwards in a sheet of foam, furrow the mountains sides with minor glens, and join the Sutledge as it rolls along below. Now and then the forests cease, and wide grassy tracts succeed, affording pasture to multitudes of goats and sheep; while here and there the whole hill side has slipped away, and left a mural height of precipitous and crumbling rocks, which are annually precipitated into the depths below by the expansive powers of the frost and snow.

The general features presented by the Geology of these hills, may be briefly and summarily comprised in the following observations :—

The main or central range of the Himalya or true snowy mountains, runs in a general direction from East-South-East to West-North-West, sending off branches or spurs in every direction, intersected or divided everywhere by deep and precipitous valleys, whose narrow bed or bottom almost invariably serves as the channel of some mountain torrent or rivulet, whose waters are supplied from the snowy heights above. Where the sides of these valleys are of sufficient elevation to retain the snow throughout the year, these rivulets receive a neverfailing supply of water; but, on the other hand, if the enclosing walls are of moderate or medium elevation, the vallies are often dry for several months together.

The vallies, it must be borne in mind, are not to be attributed, as some have contended, to the gradual wear and tear of the weather, and the streams which now drain through them, but have been formed by the convulsive uprise and disruption of the lofty mountains which form their sides; the glen or valley being thus a mere ravine or trough lying between them, and furnishing often just room sufficient for the passage of an insignificant stream.

The existence of the valley is not therefore to be attributed to the abrations caused by the constant action of the waters; but, on the other hand, the presence of the rivers and streams within them is entirely owing to the configuration of the mountains, which furnishing on the heights vast beds of snow, are ever sending down supplies, which naturally gather in the hollow troughs below, and gradually wind their way to form a junction with some larger stream, which in its turn seeks out the noble rivers of the plains.

It would therefore appear, that the existence of these hill streams is altogether owing to the previous formation of the vallies by the uprise of mountain ridges, the intervention of a glen or *khud* being the natural consequence of disruption in a range, or the sudden alteration of direction of the upheaving power, thus often causing ranges to intersect or to run parallel with each other. Thus the vallies are in no wise the consequence of the unceasing action of the streams, which now find a fitting channel in their depths.

In the present day, these glens usually communicate or open into some other, and the waters gradually escape, but doubtless time has been when their enclosing barriers were continuous, and numerous lakes were formed, until the weight of waters accumulated from the melting of the snows, burst through the rocky walls and so escaped. This is indeed a fact and no wild theory, for the people of different parts of the hills still hold traditions of such events. Dr. Gerard, I think it is, who mentions, that the natives informed him the valley of the Buspa was once closed at the lower extremity, and contained a lake, traces of which may still be seen along the banks of the present stream. A similar lake once occupied the glen in which the town of Soongnum now stands, and thick alluvial deposits containing rounded pebbles may still be seen in some of the higher parts of it; from the lower portion they have been swept away by the out-rush of the waters.

Of this, however, I shall speak again hereafter. The dip of the strata is, as might be expected in such a vast and often confused assemblage of mountains, excessively variable; and although previous travellers have uniformly insisted much on a N.E. dip, it will be quite as often found

to lie in an opposite direction. The prevailing inclination of the strata may therefore be said to be N. E. or S. W. It is, however, remarkable that the latter dip, although perceptible on both sides of the snowy range, is more prevalent on the northern than on the southern side. It has also been pointed out as matter of astonishment, that while one aspect of the mountains presents a gradual and shelving face, rich in soils and forest scenery, the opposite exposure is, on the contrary, found to present a bare and often mural cliff. This, however, is no just cause for astonishment, as the circumstance where it occurs is simply owing to the outcrop of the strata being on the precipitous side, while the dip of the other forms a more shelving slope. But this circumstance is by no means confined to any one direction in particular, for the outcrop of strata is no more prevalent on the northern than on the southern or any other exposure. It may, however, be taken as a general feature in all mountains, that while the dip or inclined position of the strata gives on the one face a shelving surface for the growth of plants, the other face or outcrop must necessarily be rugged and nearly barren, as furnishing by its precipitousness no resting place for soils. In this respect the Himalya does not differ from other mountain ranges. Travellers, however, having no knowledge of geology, and witnessing these facts, have sought to solve the problem by bringing to their aid supposed peculiarities of soil, of aspect, or of climate.

Viewed at a distance from the plains of India, these hills appear to form one long continuous chain or ridge, entirely clothed with everlasting snows, and this line has been designated by way of pre-eminence or distinction, by the name of the "snowy range," or "region of perpetual snows." Arrived within the mountains, and perched aloft upon the summit of some portion of this mighty range, the traveller is surprised to find that what he had been led to consider one continuous field of snow, is nothing more than a vast assemblage of scattered and far distant peaks, approximated apparently by the distance at which they were wont to be viewed into one wide-extending line, and forming component parts of the same snow-clad range.

He is surprised to find the greater portion of that line to be absolutely devoid of snow during several months of the year, except within the deep and sheltered glens, to which the rays of the summer sun can only penetrate for a few short hours during each day, and where frost resumes its sway the moment his beams are withdrawn or intercepted by some towering peak.

Far beyond the ridge which he has hitherto been accustomed to distinguish as the snowy range, he now beholds gigantic and frowning masses clothed in the winter garment, rising often in isolated peaks to

an elevation exceeding that of the main or central chain on which he stands.

Around him, far and wide, he beholds these rugged and awe-inspiring peaks rising pre-eminently grand amidst the sea of mountains by which he is surrounded, and he now first learns that the line of snow he has witnessed from the plains, is the wintery sheet which envelopes these often widely separated masses, but which to the eye of the far-off observer, have become blended by the distance into one long line of continuous snowy peaks.

The central range, and all the hills, with the exception of these loftiest peaks and some deep secluded glens, usually lose the sheet of snows during the period that the monsoon is raging in the plains. It is at this season that the snows send down the greatest supplies of water to the rivers, commencing about the end of May and continuing till September, when the frosts again arrest the dissolving snows, and the mountains once more put on the pure and dazzling robes of winter, and continue thus enveloped in one sheet of snows until the approach of summer again relieves them.

No sooner has the wintery garment disappeared, than a fine rich sward at once springs up, almost as if by magic, so rapid is the vegetation in these high tracts,—affording abundant pasture to the flocks and herds, which then range over them to the height of 15,000 feet above the sea.

This smiling and verdant state of things is, however, unhappily of short duration, appearing like the transient gleam of sunshine that often precedes the fiercest storm, yielding in the space of two short months to the drifting whirlwind and wreaths of snow, that soon enshroud the whole in cold and dreary solitude.

Journeying from Kotgurh, in the lower hills, towards the Spiti valley, the geological formations which came under my observation from that station to the frontiers of Tartary, were exclusively of the primary class.

Commencing at Kotgurh, and crossing the brow of the hill above Kaypoo, we find strata of *mica* and *hornblende schists*, jutting up through the surface, interspersed with veins and nodules of *quartz*.

These veins are often found to contain *iron* disseminated in small thin scales resembling *mica*, and in such cases the *quartz* is generally in a state of decomposition. This ore pays no duty to Government, and the mines, if indeed such they can be called, are seldom worked, being so unproductive, that out of 14 lbs. weight of the rough ore only 2 lbs. of iron, and that impure, can be procured.

Veins and masses of coarse primitive *calc spar* or *carbonate of lime* are also seen to accompany the *mica slate*. These rocks continue, with an

Fig: 1.

occasional bed of *porphyritic gneiss*, until we reach Rampore, half a mile beyond which a fine white *granular quartz* occurs, underlying *mica slate.*

These strata dip strongly to the N. E., and are seen on either side of the river, by which they appear to have been transversely divided, the lower end dipping down on the right bank, while the upper portion forms a high mountain on the left.

I say these strata have been *apparently* divided by the Sutledge, which now flows through them, because such *in reality* has not been the case; but the bed of the river lying through them, is entirely attributable to the disruption of the strata at this point having formed a fitting channel for the waters to escape through to the plains.

(See plate)—Fig. 1.

1. 1. *Mica Slate.* 2. 2. *Granular Quartz.* 3. *Bed of Sutledge.*

The surface of this *quartz rock* takes a yellowish rusty hue when exposed to the weather, but when freshly fractured, it is of a pure white, somewhat resembling Carrara marble in appearance, but of a coarser texture.

Onwards from Rampore, the *mica schist* is seen in several varieties, sometimes appearing to be composed entirely of *mica*, at others containing a predominance of *quartz;* in these cases the strata are either soft and crumbling, from the *mica* scaling off, or very hard and flinty, from the quantity of *quartz.*

Silvery mica passing into *chlorite schist* is abundant near Goura, and from its soapy and decomposing nature, the whole rock has in many places slipt away altogether, leaving a constantly decomposing cliff, from which in wet weather large masses are constantly falling.

Further on, the *mica* is seen to contain numerous small crystals of *hornblende*, which cause it to pass gradually into *hornblende schists. Garnets* of small size occur occasionally imbedded in the *mica*, which also contains masses of *white quartz*, in which beautiful crystals of *cyanite* are interspersed, varying in shade from pale sea green to bright blue.

The characteristic rocks, however, from Kotgurh to Sarahun are *mica* and *hornblende slates*, frequently alternating with each other, and imbedding blocks of *porphyritic gneiss* and *white quartz.*

From Sarahun the *gneiss* begins to shew itself as the prevailing rock, and occurs both common, red, and *porphyritic;—mica slate* and *hornblende* are also frequent, and when they come in contact, the *mica* often becomes jet black.

A few miles from Sarahun, on the right bank of the river, an interesting appearance presents itself in the disposition of the strata. The dip which up to this point has been pretty uniformly to the N. E., now gradually rises, and preserving for a short distance a nearly horizontal position, at last lifts itself abruptly, and dips back again to the S. W. at the same angle of about 45°.

From this disposition of the strata it becomes evident, that they have been lifted or upheaved at both ends, from the horizontal position they once had, by some volcanic force. The lowest strata exposed to view at this spot are on the right bank of the river, nearly even with the water, and form a complete arch immediately under those strata which dip to the N. E. I annex a slight sketch made on the spot, which will serve to show the position of the rocks, better than a description. *(See plate)*—Fig. 2.

Beyond this, as we approach Traada, a fine white *granite* is observed, containing large scales or crystals of *mica*, and farther on still, about Nachar, *white felspar* becomes abundant, imbedding the same *mica* crystals, and forming the first division of the *granite* of some geological writers. *Quartz* also occasionally entered into its composition and formed true *granite*, with which were found *hornblende* and *mica slates, porphyritic* and *granitic gneiss*. In some instances where the *hornblende* and *granite* were in contact, the *mica* of the latter rock assumed a black and glossy appearance, producing a variety of *granite* of some beauty.

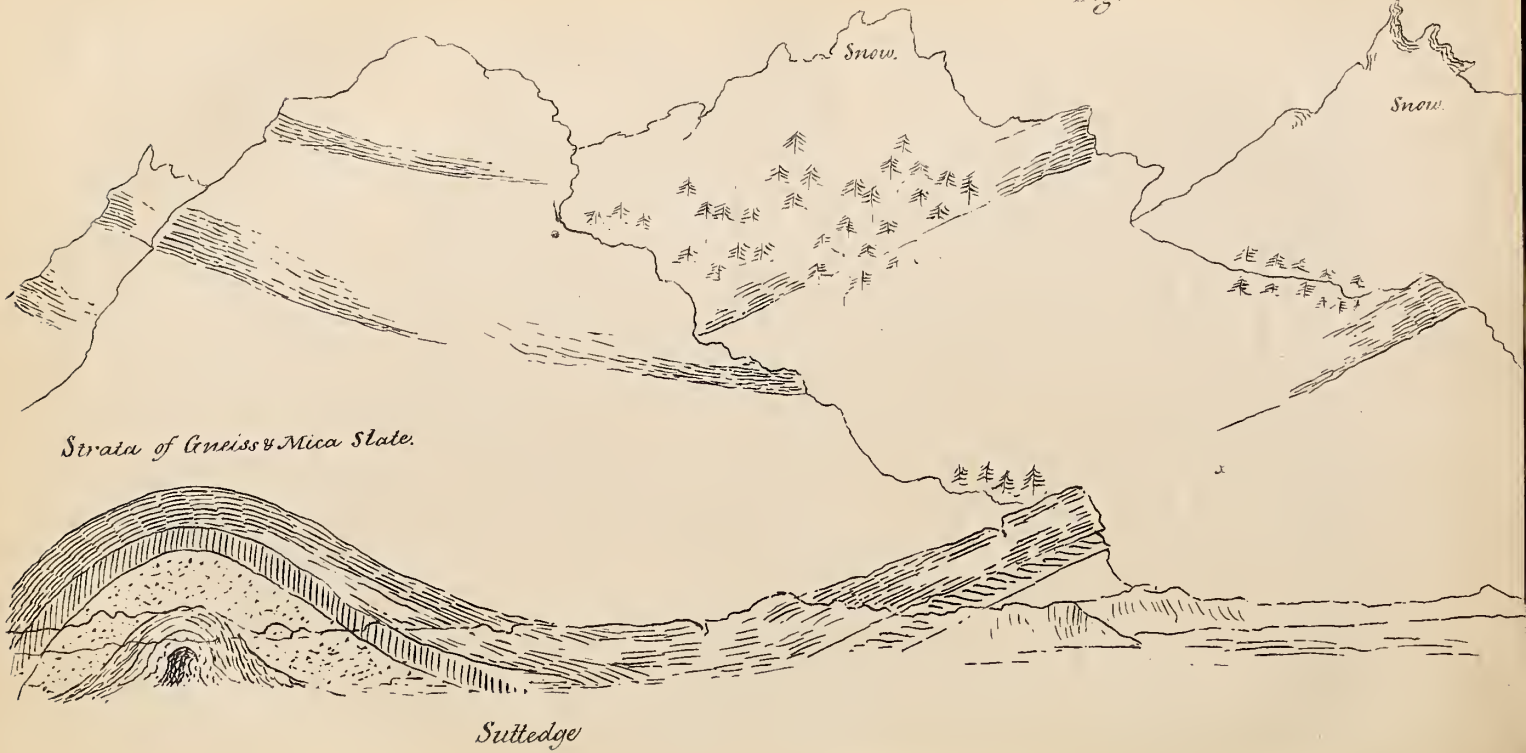
Proceeding from Nachar, the road passes over formations similar to those already mentioned, and a few miles lead down to the Sutledge, which is crossed by a good broad *Sangho*. At this point the rocks rise abruptly in huge masses on either side, confining the river to narrower limits, and affording a mere passage for its waters.

These rocks are of *gneiss*, and the stratification which previously had often been indistinctly discernible, now ceased altogether, and the beds presented a shattered and amorphous mass,—a circumstance by no means of rare occurrence among this class of rocks.

From the *sangho* to Chergong the road still continues along the bank of the river over beds of boulders and broken rocks of every size, consisting of *granite*, *gneiss*, *mica*, and *hornblende slates*. Here too *cyanite* again occurred in *quartz*, and crystals of *crysoberyl (?)* in *granite*.

From Chergong to Meeroo the strata of *gneiss* are often laid bare by the descent of streams from the snows above, and the dip is seen falling to the N. E. at about the usual angle of 45°. Beyond this place occur thick beds of *mica slate*, containing *garnets* in profusion, and often, from the decomposition of the rock, the whole road is strewed with *garnets* of various sizes. Beneath this bed occurs one of *white quartz rock*, which is seen rising from the edge of the Sutledge to about 3,000 feet in thickness.

Fig: 2



Near Chini, the *mica slate* contains occasional small crystals of *cyanite*, and sometimes passes into *chlorite slate.*

A short distance from Chini, the whole hill side has slipped down into the Sutledge, from the action of frost and snow, and the cliff now towers up from the banks of the river, presenting a sheer and perpendicular wall of between six and seven thousand feet in height. This vast mass is composed throughout of *gneiss*, and the road, which is a mere scaffolding, passes along the face of it, at 4,000 feet above the Sutledge, which is seen foaming below.

From this to the village of Lecpee, the formation is pretty nearly the same, consisting of *granite*, *gneiss*, *hornblende*, *mica*, and *quartz.*

The *granite* about Punggee, Rarung, and Junggee, contains a large proportion of *hornblende*, and at Rarung it is also seen to assume a brick red colour, often traversed with veins of *quartz*, both red, amber, and white. The red *granite* appears only in masses imbedded in a yellowish variety, which is the true rock, and which towards Leepee gives place to *gneiss* and *mica slate.* Above the last mentioned rock commences the first bed of *argillaceous slates*, which continues interstratified with *greywacke schists* to the top of Roonung Pass. The alternations of these strata are frequent, sometimes the one and sometimes the other rock prevailing in thickness.

These beds are evidently the first indication of the transition, or lowest secondary formation of geologists, and extending across or through the Roonung Pass, downwards to Soongnum, they are seen to support strata of compact *greywacke*, and beds of *quartzose* rock, apparently analogous to and holding the place of the *old red sandstone* of Europe.

The town of Soongnum stands in a valley immediately between the Roonung Pass in its front and the Hungrung Pass in its rear. In front, the range of hills which form the right side of the Rushkoolung valley are composed of an *argillaceous* series, consisting of *clay stones* and *greywacke slates*, of different textures and degrees of induration, and dipping to the S.W. The strata in the rear of the town, forming the left bank, dip, on the contrary, to the N. E. and are composed of *greywacke slates*, compact *greywacke*, *old red sandstone*, and a superior stratum of *limestone* and *greywacke.* These towards the summit of the range gradually change their dip, and rise up again to the S.W., the whole being surmounted by a bed of dark blue secondary *limestone*, containing portions of *clay* and *silex.* This formation extends along both sides of the Rushkoolung valley, even to the Manerung Pass above Manes in Spiti, a distance of about seventeen miles. About seven miles from Soongnum, copper veins occur in their strata of white *quartz* rock, and *veinous quartz*, lying occasionally between, or ramifying through, the *greywacke* and *old red sandstone.* The

last mentioned rock varies much in colour and in texture, the lowest stratum being *white*, and scarcely distinguishable from *quartz* rock, but changing gradually to a faint tinge of *pink*, becoming deeper as it passes upwards, until its colour is of a dull *purplish* hue.

These strata are sometimes separated by a very thin layer of soft whitish *marl*. The crest of the Hungrung Pass is 14,837 feet above the level of the sea, and is composed of dark blue *limestone*. The range on which this Pass is situated divides Kunawur from Hungrung, -a district inhabited by Tartars, who are suhject to Bussaher.

Descending from tbe Pass to the village of Hungo, the road passes over numerous alternations of blue *limestone* and *greywacke slates*, resting upon white *quartz*, which lower down gradually passes into a greenish variety of the same rock.

These strata all dip to the S.W., and are probably an outcrop of those which run in a N.E. direction from behind Soongnum, and thus shew the effects of what may be termed a *double upheavement*, or lifting of the same strata at two different points. The lofty *granitic* peaks which tower up to the right of the Pass, at once shew that they have been instrumental in forming the S.W. dip, and it is more than probable that the same rock might be discovered also protruding through the strata on the opposite exposure.

The following *partly* imaginary section of Hungrung, may serve to explain my meaning:—

(See plate)—Fig. 3.

Supposed Section of Hungrung Mountain.

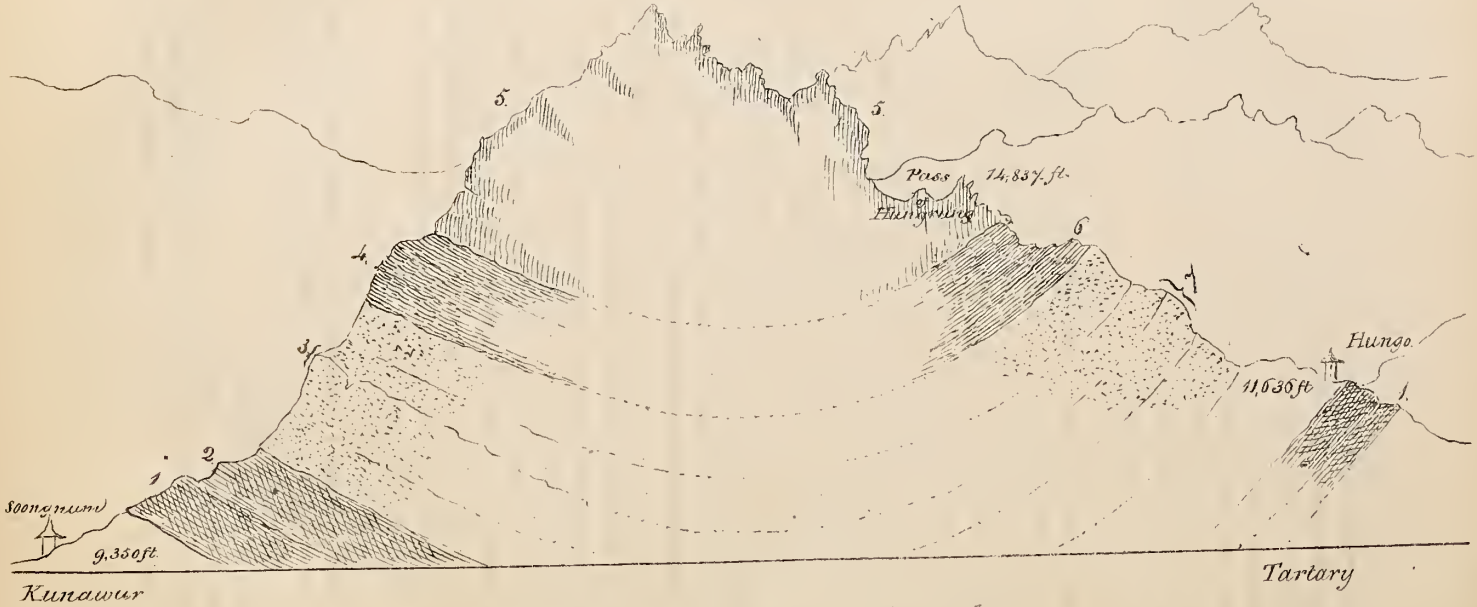
Strata of *greywacke slates* are met with for a few miles after leaving Hungo; but they disappear as we approach Leeo, or rather, from the great descent of the road, they are left far above, while the base of the mountain is found to be a dark coloured *gneiss*, traversed and intersected in every direction by veins of white *quartz*.

Leeo stands in a kind of basin, surrounded on all sides by lofty hills of *granite* and the same dark *gneiss;* but the lower parts of them are overlaid by strata of the secondary series, consisting chiefly of *greywacke* and *shales*. On the sides of the surrounding hills exist strong indications of the former presence of a lake, in the lines of water-worn stones and pebbles that now rest many hundred feet above the river Lee.

These appearances were long since pointed out by Dr. Gerard, who though knowing nothing of geology, was at once forcibly struck with

Supposed Section of Hungrung Mountain

Fig. 3.



1.1. Greywacke slate. 2. Compact Greywacke. 3. Old Red Sandstone
4. Strata of Greywacke and limestone 5.5. Blue Limestone.
6. Strata of Limestone and Greywacke. 7. Quartz Rock - white and Green

the conviction, that nothing but the former presence of deep waters could account for the phenomena here so plainly exposed to view.

In his conjectures on this head, that enterprising and unwearying traveller was undoubtedly correct.

In the bed of the Lee, where it is crossed by a wooden *sangho*, a thick bed of white *quartz rock* is seen dipping to the S.W., and as we mount the hill in the direction of Chungo, beds of *boulders*, and disjointed masses of *granite*, *gneiss*, and *mica slates* hurled from above, are passed over, now in many places overlying the secondary *shales*.

At the village of Chungo, which is the last on the left bank of the Lee, under the government of Bussaher, the most decided indications of the former presence of a deep lake again occur. To the eastward of the level patch on which the village and its cultivation stands, rise three lofty and rugged mountains, whose shattered sides present sections of the same strata as those noticed at Leeo: namely, deep beds of dark *gneiss* and *mica slates* intersected by *granitic* and *quartz* veins of various thickness; these strata dip down towards the west, and as they approach the village, are lost beneath the vast accumulations of alluvial soils, which here, as at Leeo, mark the former presence of deep and tranquil waters.

To the southward these deposits consist almost entirely of thick beds of *clays*, *sands*, and *boulders* of every size, rising high above the level of the village; while to the NNE. are again presented the same alluvial deposits of a greater thickness, and accompanied in addition by a deep and extensive bed of a pure white and friable *gypsum*. This bed is perhaps a most valuable discovery in a geological point of view, as tending to show the nature of the waters from which it was precipitated. This thick *gypseous* bed is overlaid by the *sands*, *clays*, and *boulders*, which have already been noticed. At the fort of Skialkur, on the opposite or right bank of the river, about 3½ miles from the village of Chungo, this *gypsum* is likewise seen overlying the transition series of alternating *shales* and *sandstones*.

These deposits are now at the height of 2,000 to 2,500 feet above the present level of the river's course, or at an elevation of 12,000 to 12,500 feet above the level of the sea.

The three mountain peaks of *gneiss*, which rise up to the eastward of Chungo, are divided from each other by narrow glens, through which streams flow down to join the sea, between which and the base of these mountains, the whole alluvial deposits have been swept away, and the present cultivated plain of Chungo is therefore situated far below the surrounding alluvium, which rises like walls on either side of it.

As we proceed from Chungo towards Spiti, the road lies at first over the alluvial accumulations above-mentioned, for two or three miles, when from

the abrupt nature of the primary rocks that are hence met with, they cease to exist, except far below where a wide and shelving plain lies along the river's side, and which is entirely composed of them. From the point where the road leaves them behind, for a distance of six miles, the strata are again of *mica*, *slate*, and *gneiss*, varied with the same carious veins of *granite* and *quartz* as those of Leeo and Chungo. At this point the mountains are separated by a rapid river called the Paratee, which runs down from Chinese Tartary and joins the Spiti near Skialkur. Here the primary series may be said to disappear, and the Spiti road crossing the Paratee by a natural bridge of stone, which is formed of several large masses of *gneiss* fallen from above, and wedged firmly together over the stream, brings the traveller at once upon the secondary class. The lowest strata are therefore just perceptible where the waters cut their way through, and we thus catch a glimpse of the *gneiss* of the opposite bank, above which occurs a *talcose schist*, white *quartz* rock, and *clay slate*, dipping to the S. W. Above these are alluvial deposits similar to those of Chungo, and extending for a mile or two inland from the river, forming a flattened plain, on which stands "Kewrick," the first village of Chinese Tartary. Here again a portion of the deposit has been swept away by a descending stream, exactly as at Chungo. It is worthy of remark, that all these alluvial deposits are the deepest and most extensive when the surrounding hills have the most gradual slope, and where they retire so as to form recesses; while on the contrary, as might be expected, where the dip of the strata is rapid or acute, scarcely any trace is left of the former existence of a lake, because the deposit has been swept away by the outrush of the escaping waters.

These accumulations are likewise the most extensive at the lower end of the Spiti valley, where alone the *gypsum* is to be found. To this fact I would beg to call special attention, as it will be hereafter alluded to, and prove of some importance in the explanation of these *diluvial* and *alluvial* deposits.

From Kewrick the road runs over hills, which are entirely of the secondary class, being frequent alternations of the same rocks, as *greywacke* and *claystones*, *limestones*, and *sandstones*, and in one or two instances a trap of *greenstone* is also seen, both stratified and amorphous.

From Kewrick to the village of Larree, which is the first inhabited place in Spiti, we travel first for four miles over the edges of strata of *clay slates* and accumulations of *debris*. From the decomposing state of these strata, caused the effects of weather and a portion of *alum*, which causes them to scale off in soft flakes, the whole of the hills on either side of the Spiti river have a charred and blackened aspect, which combined with their arid and barren nature, gives a sad and melancholy appearance to the country, by no means cheering to the weary traveller.

The dip of the strata is now uniformly to the S. W., and generally at an angle of 45°, though here and there they rise abruptly to a nearly vertical position, denoting an excess of the upheaving forces from below. As we approach Larree after crossing the Gew river, the bed of which is of *greywacke slate*, we come upon a thick stratum of pure white *quartz* rock, which appears to be a continuation of the same rock which was seen at Leeo on the opposite side of the range; in contact with this, and immediatcly resting upon it, is another bed of siliceous rock, which passes gradually into thin strata of flinty slate. Upon this rests *clay slate*, which then alternates frequently with *greywacke* and *sandstones*. Further on we perceive masses of *gypseous breccia* formed of angular fragments of *argillaceous schists*, encrusted or cemented together by *gypsum*. This rock, if it be entitled to the name, owes its origin to the same waters which deposited the *gypsum* beds of Chungo and Skialkur; it is found overlying the edges of the true strata from which it has been formed, and occurs in rude and mis-shapen masses. To this *breccia* I would also call attention, as serving to shew a change in the waters of the lake, or at all events a decrease in the proportion of their *saline* properties. Farther on still, and nearly opposite the village of Somra, a stratum of trap is seen to occur between *shales* above and *sandstone* below; it is conformable to the true strata with which it is clearly interstratified, not causing any dislocation of the series. Beyond Larree, however, the same rock occurs again, in one place interstratified with *greywacke* and dark *blue limestone*, at another running up vertically in an *amorphous* mass through the strata, which it first dislocates and then overlies. In this case, the strata on either side of the Spiti dip to the S. W., while the rocks through which the trap has more immediately passed or been injected, are thrown boldly and abruptly from the usual course to the westward. The strata on the opposite side of the river are at the same time raised from the angle of 45° nearly to a horizontal position, and after some twisting of the strata, again with apparent difficulty regain their wonted S. W. dip. Here it is evident that the trap in question has been the molten vein whose struggles to burst upwards through the superincumbent weight of strata has been the agent which has thrown them into their present inclined positions, and in its upward course has first become partially interstratified with those which possessed the least induration or means of resistance, and then finally, as it burst through all obstacles, flowed over them in a broad sheet of molten matter, which as it cooled assumed the present solid and compact texture.

Of such having been the fact, we observe proof in the vein of vertical trap acting as a support, or upright as it were, from which the strata now incline and dip downwards.

As, however, trap is known to possess, "in a general sense, the universal common character of being unstratified, and posterior to the rocks with which it is connected,"* it becomes necessary in here stating, that it is conformable to and interstratified with those of the secondary series, to offer a few theoretical remarks on the probable means by which this partial stratification has been produced.

The interstratification of this rock, where it occurs, is of very inconsiderable extent, when compared with that of those with which it is associated, possessing by no means the wide and almost universal range of the primary and secondary series, but being on the contrary, "in a great measure limited to particular spots, more or less extensive, and to be, if separately considered, partial and independent productions."†

Let us then suppose that these secondary strata were once (which in fact they really were) horizontal deposits from the waters, which it is generally supposed were instrumental to the formation of the series to which they belong.

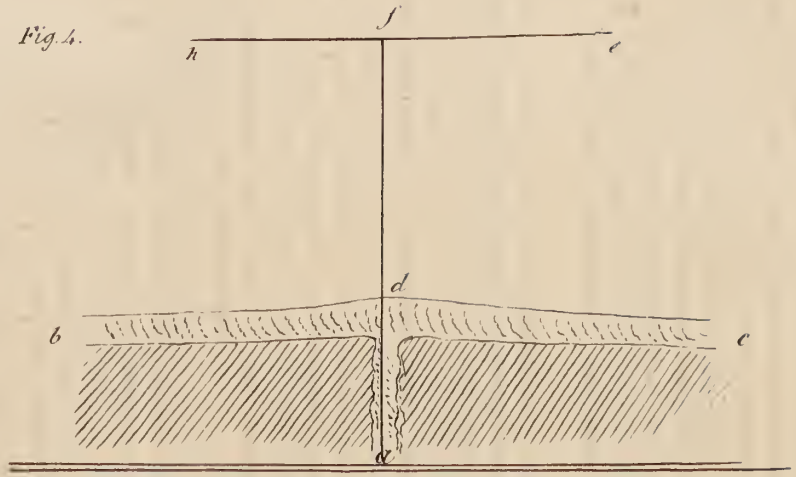
We shall thus perceive them to have been deep *unconsolidated* masses of sands, covered by muddy layers, which we now term *shales*. The struggles of the molten matter to procure access to the surface would, from the *heat* and *pressure* engendered by its upward course, have the effect of vitrifying and indurating the sands through which it forced a passage, and of converting them into strata of *sandstone*, while the *shale* or muddy deposit next in succession being lighter and less massive than the stream of trap, would probably rise and yield a passage between itself and the *sandstone* for the molten matter to form a stratum, somewhat in the same manner as oil would give place to a stream of water if injected through a tube or aperture below it.

The muddy deposit, however, being hardened by contact with the *lava* and by the general pressure of the uprising strata, would burst as the *sandstone* had already done, and yield a passage to the trap, which flowed through and overspread them at the surface.

Should it be contended that the outburst of a stream of *lava* such as that I have described the trap to have been, would have expended itself in a shower of ashes or cinders, rather than have assumed the stratiform structure it now exhibits, I would remind the reader that the secondary rocks are supposed to have been deposited in the bosom of a tranquil water, and that that water formed either extensive lakes or portions of the sea.

* † McCulloch's Geology

Fig. 4.



The upheaving *lava* current had therefore not only the weight of the superimposed deposits, but the pressure likewise of an enormous volume of water. It becomes more than probable, therefore, that this aqueous pressure would effectually check the tendency to produce cinders and ashes, and thus as the stream poured upwards through the deposits and came in contact with the waters, the molten matter would extend itself along the bottom of the lake, and thus overlie the secondary strata, as in the present instance.

For farther information on this subject, I would refer the reader to *De la Beche's* Geological Manual, where will be found some very just and apposite remarks on the point in question.

"It being by no means probable," he says, "that the density of sea water beneath any depth which we can reasonably assign to the ocean, would be such as to render it of greater specific gravity than liquid *lava* ejected from a volcanic rent, situated beneath the sea, it would follow that so long as the lava continued in a state of fusion, it would arrange itself horizontally beneath the fluid of inferior specific gravity." The question then arises, how long a body of lava in fusion would remain fluid beneath the waters of the sea? The particles of water in contact with the incandescent *lava* would become greatly heated, and consequently, from their decreased specific gravity, would immediately rise: their places being supplied from above by particles of greater density and less temperature. Thus a cooling process would be established on the upper surface of the *lava*, rendering it solid.

Now as the particles of fluid lava would be prevented from moving upwards by the solid matter above, pressed down by its own gravity and the superincumbent water, they would escape laterally, where not only the cooling process would be less rapid, from the well-known difficulty of heated water moving otherwise than perpendicularly upwards, but where also the power of the fluid lava to escape resistance would be greatest. *(See plate)*—Fig. 4. Let *a* be a volcanic rent, through which liquid *lava* is propelled upwards in the direction *d f:* the *lava* being of greater specific gravity than the water *b h e c* it would tend to arrange itself horizontally in the directions *d b d c* The surface *b d c* having become solid, the *lava* would escape from the sides *b* and *c*, spreading in a sheet or tabular mass around; and this effect would continue so long as the propelling power at *a* was sufficient to overcome the resistance opposed to the progress of the *lava*, or until the termination of the eruption, if that should first happen."*

This clearly stated theoretic problem may now be successfully reduced to practice, and will correctly and exactly apply to the phenomenon under

* De la Beche's Geological Manual, p. 125.

consideration. The truth therefore of *De la Beche's* proposition will be at once established.

(See plate)—Fig. 5. Let us suppose these now inclined strata to be in their original horizontal position, and 2 and 3 forming beds of unconsolidated sandy and muddy deposits beneath the waters of the lake or sea *a c e h.*

Then *a a a a*, &c. is a vein of *lava* or molten *trap*, which in its endeavours to find vent, upraises and bursts through the solid primary series denoted at 1.

By the heat and pressure thus engendered, the *lava* indurates the sand at 2, and converting it into *sandstone*, breaks through it also, and is thus brought in contact with the muddy deposits represented at 3. This deposit being of a specific gravity inferior to the stream of *lava*, is naturally displaced and forced to contract and furnish room for a stratum of *trap* at *a a a.*

The heat and pressure, however, continuing, speedily and almost on the instant, converts the muddy deposit into *shale* or *slate clay.* And the lava current bursting through it and the superior stratum of *limestone*, comes at length to the surface, and in contact with the waters. Here then commences the facts detailed theoretically by *De la Beche*, as already quoted, and the stratum of *trap* spread over the surface of the now inclined and consolidated strata of deposits; while the waters of the lake or sea being displaced by the upheavement, effected an escape through the various channels afforded by the disruption of the uprising strata.

It may possibly be objected that the occurrence of a compact stratum of *limestone* above the *shale*, and in contact with the *trap*, will at once invalidate the theory here proposed, from its being a known fact, that when heat is applied to *calcareous* matter, the *carbonic acid* is driven off, and the remaining *lime* rendered infusible.

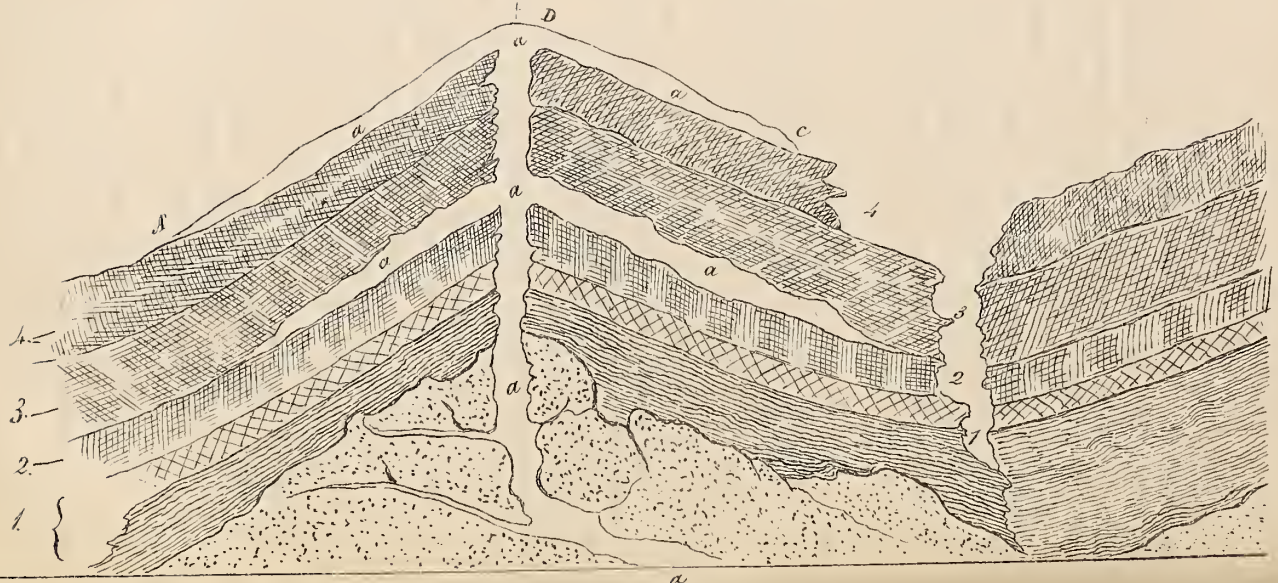
I shall endeavour therefore to obviate such an objection, by quoting and *establishing* a theory long since propounded by Dr. Hutton, which at the time of its proposition was looked upon as an ingenious, but perfectly untenable, doctrine.

"He had asserted that *calcareous* rocks, like every other, had been subjected to the action of heat. But it was well known that when heat was applied to this class of rocks the *carbonic acid* was driven off in the shape of *gas*, and the remaining *quicklime* become infusible. Dr. Hutton indeed had answered this by suggesting, that the pressure of the superincumbent ocean was sufficient to confine the *carbonic acid*, and to cause it to act as a flux on the *quicklime*. His theory, however ingenious, was so abundantly gratuitous, that it by no means satisfied even his own disciples. After Dr. Hutton's death, Sir James Hall ascertained by numerous experi-

F

H E

Fig. 5.


D
a
a
a

ments that *carbonate of lime* might readily be fused when exposed to heat, if it were at the same time under a pressure not greater than Dr. Hutton's theory required, or about a mile and a half of sea."*

Now it is easily perceptible, that the result of these experiments is in exact accordance with the effects which the theory here proposed would give rise to.

We have supposed that the present solid strata were once soft and aqueous deposits beneath a vast depth of waters; we thus perceive a beautiful and conclusive illustration of Dr. Hutton's theory in the fact, that when the *heat* generated by the pressure and condensation from below acted on the superior *calcareous* stratum at 4, that very stratum was then actually subject to the pressure of the superincumbent waters at *A C E H*, which by preventing the escape of the *carbonic acid gas*, and causing it to act as a flux upon the *quicklime*, converted the stratum, as Dr. Hutton had suggested, into the compact state which it now exhibits.

As theoretic speculations, however just, and however much in accordance with the phenomena observable, they may prove to be, may nevertheless be deemed misplaced in a paper of this kind, I shall leave the subject for a more fitting occasion, and now pass on to a consideration of the remaining facts exhibited in the strata of the Spiti valley.

From Kewrick to the village of Leedung, the strata may be said to be of the same descriptions, namely, *talcose schist*, *quartz rock*, *greywacke slates*, *clay slates*, *sandstone shales* and *trap*, all except the last alternating frequently with each other.

A precise description of each rock belongs rather to the department of the mineralogists than to that of the geologists, and I therefore content myself with pointing out the series rather than individual species, in order that I may hasten on to the theory which the appearances presented suggest.

Passing therefore from Larree via Pokh to the fort of Dunkur, we find the strata to consist of the same alternations of rocks as those already mentioned; but at this latter spot the appearances denote a struggle for the direction of the dip, which merits some attention. The range of hills running along the right bank of the Spiti opposite to Dunkur have a N. W. by W., and S. E. and by E. direction, and at four miles below the fort the strata dip uniformly to the S. W. From that point, however, or near the village of Maness, it would seem that an upheavement had taken place through or along the centre of the range, causing the superior strata to assume a pent or roof-like appearance, throwing them on one side with

* Journal of Science, p. 4.

an acute dip to the N. E., while the opposite side preserved the S. W. direction at a less acute angle. In such cases where a section is obtained by a water course, the strata forming the heart or interior of the range are seen twisted in every grotesque direction. These strata consist of thick beds of *argillaceous schists* and *sandstones*, and what strikes one as singular in their disposition is, that the upheavement has had the effect of throwing the outcrop of the *sandstone*, or superior stratum dipping to the S.W., higher than the portion which falls to the N.E. Thus the joining of the strata is not at the summit of the range, but the rocks of the N.E. side are seen lying against those of the opposite direction, whose upper edge, or outcrop, juts out above them. *(See plate)*—Fig. 6.

Passing on from Dunkur we come to the Lingtee river, which joins the Spiti.

Here again a double upheavement of the strata appears to have taken place, which will be better understood by a reference to the annexed sketch, and which may serve as an example in all similar cases. *(See plate)*—Fig. 7.

On the right bank of the Spiti, the strata fall acutely to the river in a N. E. direction, as already pointed out, while on the left bank, although they at first dip to the same direction, they are seen first gradually to rise to a nearly horizontal position, and then to dip backwards again to the S. W. This occurs on the left bank of the Spiti and the right bank of the Lingtee at the point where the two rivers meet.

On the left of the Lingtee the strata first dip to the N. E., and then after many extraordinary twists and contortions, yield, as it were reluctantly, to the contrary dip, which turns them back to their old and proper direction of S.W.

In all these cases it will be found that the rocks are rent asunder, and the disruption now forms deep *khuds* or glens, through which at present a stream or river descends.

About six miles from Dunkur stands the village of Leedung, where the strata consist, in an ascending order, of *greywacke* and *clay slates*, dark blue *limestone shales*, *limestone* and *sandstone*, repeated in many alternations.

Leedung stands at the height of 12,037 feet above the sea, and the strata just mentioned rise precipitously above it to the height of from 3,000 to 6,000 feet more, or to 15,000 and 18,000 feet above the sea. The highest stratum here appeared to be of *sandstone*, resting upon *shale*.

To the N.E. of this village rises a Pass, which has an elevation of 15,247 feet, and here along its summit, where the streams which descend

Fig. 6.

Fig. 7

N.B. The precise nature of these strata is undetermined from the impossibility of procuring access to them, but they appear to consist of Contorted Shales, and limestones surmounted by sandstones.-
No.1 Bed of Spiti River. 2 Vertical strata. 3.3.3. Beds of debris and fragments from above.-

from the snows have worn numerous channels through the loose and decomposing *shales*, occur the fossils which were long ago discovered by Dr. Gerard. These consist of various species of *ammonites, belemnites, orthoceratites arca,* and some others; but all partaking of the same decomposing nature as the *shales* in which they occur, so that it is next to impossible to procure a perfect specimen, or to prevent its falling to pieces if obtained.

The *limestones* which here alternate in the series, are sometimes wholly composed of shells, and are of a dark grey colour, while at the height of 14,712 feet occurs a bed of a whitish grey colour, and almost free from shells, but imbedding large rounded masses of various sizes, which when broken are found to be composed wholly of the dark shell *limestone* already mentioned.

Among these hills there is great confusion in the direction of the dip, the strata sometimes inclining to the S.W. or N. E., while at others they are N.N.W., and to almost every point of the compass. These masses are, however, generally limited to small extent, and appear like fragments torn from the true or main direction by the force of the upheaving agent. These strata extend along the range for many miles farther up the valley, but no fossils were apparent at any place, except on the heights above Leedung and Larra. They exist, however, in the form of shell *limestone* along the range immediately leading from the lake Chummorareel; but at this season the whole range lay so deeply buried in snow, that the route was impracticable, and I was obliged reluctantly to quit the fossil site, not half satisfied with its investigation.

From the nature of the rocks in this part of the valley, and the reports of those who have visited lake Chummorareel, I should feel strongly inclined to believe that it is situated among the *Lias clays*. Puttee Ram, the Tartar wuzeer, who has often visited the spot, assured me that the lake was surrounded by high hills composed of *earth* of various colours, red, yellow, blue, &c. and that the country around was all of similar *clays*, and not composed of rocks like the lower parts of Spiti, although sometimes above the hills of clay, large masses of stone were also found.

Such a description, all rough though it be, would lead one to expect the *Lias* beds resting on the red *marle*, and surmounted by the *sandstone* series above the *oolite*. The subject, I am sorry to think, must thus far remain obscure, until some more fortunate traveller shall venture upon those interesting scenes.

From this slight sketch it will be seen that the geological series from Kotgurh to the neighbourhood of Soongnum, in Kunawur, is that of the primary class; while thence, to the head of the Spiti valley, we find,

with slight interruption, the transition or lowest secondary series containing fossil exuviæ of marine *Mollusca.*

From the point of junction of the Spiti and Sutledge to the head of the Spiti valley, we find every thing indicating the former presence of an extensive lake. These indications consist in beds of friable or earthy *gypsum, clays, sand,* and rolled *pebbles* now left high in horizontal strata above the course of the river at the present day.

These accumulations are also seen to be the thickest and most extensive at the lower end of the valley, where the mountains form recesses, and where the slope is the most gradual. We find the *gypseous* beds alone at the lower end, and we also find them growing thinner and dying out as they approach the higher and narrower part of the valley, until at last their presence is only to be traced in the incrustations of other rocks.

The *clays* and *sands* which have been deposited upon these beds are, on the other hand, universal throughout the valley wherever they could find a resting place, and they pass on after the *gypsum* has ceased up to the higher portion of Spiti, where at length they yield to *pebbles* and *boulders.*

I have called attention to these facts, because I shall presently show by what means such an arrangement has taken place.

It will, however, first be necessary to state the theory which these appearances suggest, and then to show how the phenomena presented to our view, are in accordance with that theory.

Theory of the Spiti Valley.

We have already seen that the valley bears every appearance of having been at some remote period the bed of an extensive lake, which at length, by the accumulations of its waters, and its enormous pressure upon the rocky barriers which confined it at the lower extremity of the valley, burst forth with irresistible power and devastating effects down into the district of Kunawur. I shall endeavour to trace in detail the circumstances which may have led to this outburst of the Spiti waters.

The first formation of such a lake may have occurred from one of three distinct causes, namely :—

First. If we allow the existence of these vast mountains previous to the flood, the lake may have accumulated in the bosom of the valley from the melting of antediluvian snows, and thus, (supposing the Mosaic narrative to be correct,) it will be seen, that although originally composed of fresh waters, it must have changed its nature and become salt at the period of its submersion by the deluge; and again in after years, when that deluge

had subsided, it would have gradually regained its freshness, and parted with its saline properties by the constant accession of streams from the beds of snow surrounding it.

Secondly. If these mountain ranges were formed at no remoter period than that assigned to the *subsidence* of the Mosaic deluge, the lake may have been formed simply by the accumulation of the snow streams from the heights above, *since* that last grand catastrophe.

And, *Thirdly.* If suppose these mountains to have been upheaved by *submarine volcanic* agency during the convulsions attendant on the subsidence of the deluge, we may assign the origin of the lake to the enclosing or retaining of the oceanic waters, as the ranges rose upwards from beneath the waves.

I shall presently speak of the most probable of these three causes, and in the mean time taking for granted the former existence of the lake, proceed to show by what means it has disappeared.

The walls of the valley, then, we must suppose to have been at one period continuous, without an outlet; thus forming an extensive basin containing a lake of water, which from its vast expanse and magnitude, might have been almost termed an inland sea.

The surrounding barriers of this lake rearing their heads aloft to an elevation of from 16,000 to 20,000 feet and upwards above the level of the present sea, were then, as they still continue to be, the never-failing receptacles of eternal snows, which furnished streams of ever-running waters, all emptying themselves into the broad lake beneath.

This constant increase would of course in a litle time cause the waters to rise, and overflow that portion of their bounds which attained the least elevation, and accordingly we find it actually to have been so at the confluence of the present stream with the river Sutledge.

This overflowing would at first proceed quietly, and with a gently exerted force; but as the action of the never-ceasing stream gradually carved a deeper channel over the rock, a greater body of water would flow down, bursting through and tearing away blocks of increasing magnitude, until its weight and constant action having loosened and undermined the bank, the massive barrier which had hitherto sustained this enormous weight, now weakened by the repeated loss of its various supports and out-posts as it were, would at length give way before the overpowering pressure of the waters, and yield them a passage to the vales below.

Bursting with headlong fury through this, its long sought aperture, what devastation must have attended the downward passage of such a body of water! Huge fragments of rocks, together with the soils and productions of whole districts through which the torrent rushed, must have been swept off before it, and have been deposited at various distances from

their original sites, where combining with other soils, they would form strata peculiar to those situations.

It is probable that these sudden overwhelmings of the district now called Kunawur, may have happened more than once, both from this and from other lakes; for although the Spiti lake had burst through its rocky barriers and found an outlet for the superabundant waters, it would merely have expended itself to a level with the opening it had made, at which point it would again remain until the accumulating supplies from the snow-clad peaks above, and the never-ceasing flow and action of the waters upon the already ruptured rocks, should again have brought about a similar outpouring of its waves, and thus would the lake gradually sink by the same never-failing means, from level to level, until its whole body of waters was expended, and so leave those trickling and apparently insignificant snow streams which had ultimately caused its expulsion from the valley, not only to usurp its former bed, but to form by their united waters the present river Spiti.

From these facts a question naturally arises, as to the probable source from whence the vast beds of marine exuviæ found in the higher portions of this valley have been derived, and the answer to it must entirely depend upon the origin we assign to the lake itself. That is, if these mountains and the lake were in existence before the Mosaic deluge took place, it will follow, that the quality of the waters must have undergone a change from fresh to salt by the influx of the ocean, and it might on this account be contended by some that the marine shells rising with the waters, were here left living when that ocean again subsided to its proper bed; that as from that period the waters of the lake would gradually part with their saline properties, as the snows around continued to pour down their limpid streams, causing the lake again to resume its pristine freshness, it becomes evident that those marine animals, exclusively formed and adapted for an existence in salt waters, could only have survived there for a short time, and would then have been deposited in one vast accumulation. But had this been the case, the exuviæ must have belonged to species *still existing* in the seas, *whereas* we find them all to be the spoils of *extinct animals;* and again, had such been the case, they would have been imbedded in strata of the *tertiary formation,* whereas, we find them in those of the *secondary deposits,* which are referrible to a period *long antecedent* to the *Mosaic* flood.

Thus, we must at once abandon this first position.

Secondly. If we suppose that the lake was formed *at* and *by* the deluge, and afterwards by the constant accession of snow water became fresh,—the effect, as regards the marine deposits, will still be the same; and consequently this second supposition must be abandoned likewise.

As it is therefore evident that the presence of the fossils can be attributed to neither of these sources, we are at once led to the conclusion, that the vast ranges of the Himalyan mountains were *not in existence previous to the Mosaic deluge*, but that the rocks and strata which they now exhibit were at that time horizontal, and forming part of the bed of the antediluvian ocean. Of this I shall adduce positive geological proof in the sequel.

The fossils therefore which are found imbedded in these higher tracts, did not become extinct at the deluge, but at a period long previous to that great event, when the secondary formations in which they occur were deposited, and which period though hitherto passed by unnoticed by writers on geology, is nevertheless clearly pointed out by the sacred historian.

In order more satisfactorily to ascertain the causes by which animals once living in the depths of ocean have been left imbedded in rocks now towering to a height of more than 16,000 feet above its present level, and at a distance of many hundred miles from it, it will be necessary to skim lightly over the events which have occurred on the surface of our globe from the time of its creation, "until that last catastrophe to which these mountains owe their existence. "Geologists," says Cuvier, "have hitherto assigned but two revolutions to account for the phenomena which the strata of the earth now exhibit, namely, the creation, and the deluge, which he *rightly* thinks are insufficient, although he *erroneously* pronounces them to have been numerous." Nor is it surprising that he should have deemed them inadequate to account for such phenomena, since the first of these periods was no revolution at all, but occurred *before* the vegetable and animal races, whose remains constitute the chief phenomena of our strata, *were created*, and therefore it could have been in no wise instrumental either to their destruction or deposition. It is, moreover evident, that this first revolution of geologists could in reality be *no revolution*, but a *creation!* A revolution must imply the overthrow or upsetting of an *already established* order of things; while here in this first period we know that there was *no overthrow*, but *a setting in order* of things which had *not as yet existed*; therefore it was a *creation*, or calling into being an order of things which subsequently in after years *was to be overthrown* through the disobedience of created beings.

The separation therefore of land and sea, by which our earth was first called into existence, can be looked upon as only a creation, and such indeed it is termed by the sacred historian, for he tells us that in the *beginning* the materials from which our land was to be formed were called into being, and that on the third day, the interim being occupied in perfecting other arrangements all tending towards its welfare, the earth was separated from the waters, and its existence commenced. True, the record *mentions two* and *only two* distinct revolutions, but the Mosaic, equally with the

mineral geologist, has disregarded and passed over the first of them which occurred, *not during* but *subsequent* to the Creation, when man first transgressed the commandment of his Maker, and drew down, in consequence, the *curse* of an offended God upon the *earth* and its *productions.* Thus it would appear, that geologists are right in referring the fossil exuviæ of the secondary strata to a revolution long prior to that of the *deluge*, and they have only erred in not assigning to it the actual period pointed out by the record.

The second revolution, or *deluge*, is too clearly marked, and its consequences too obvious to escape the notice of any one; but the historian enters into no details of the means by which the first was effected, although he clearly points out the effect of it. This difference in the seeming importance of the two revolutions may have arisen from the fact that the first did not, like the second, involve the loss of life to the human race, and therefore the record is content to point it out merely by its *effects*, leaving us at liberty to *infer* the causes.

Asserting therefore, with the inspired historian, that our planet, together with all its goodly furnishing of vegetable and animal life was created and finished in the space of six days, each of the same duration as these of our present computation, and that on the sixth and last day the progenitors of the human race were also created, and were consequently contemporaneous with the whole animal kingdom, as constituted before *the fall*, I shall endeavour to point out the period when, in my opinion, the marine animals, whose exuviæ are imbedded in the secondary strata of the Spiti valley, ceased to exist.

Within the limits, however, which it is found necessary to assign to the present paper, it cannot be expected that I should much enlarge upon the time at which, or the causes by which this first great change in the temperature of our earth occurred, and I shall therefore pass it over with a slight allusion only, and with the less regret, since I hope at no distance of time to lay before the Society a theory of the changes which have taken place on the surface of the earth, from creation to the present time.

If in succeeding ages a writer were to state that the various countries of our present earth had suddenly undergone a great change for the worse in the prolificness and character of their vegetation, would not our posterity justly look upon it as an indication of a well marked revolution and change of temperature?

And would they not naturally seek for a corresponding change and loss in the genera and species of the animate classes?

Assuredly they might reasonably do so; then why do not we, who have a parallel case presented to us in the pages of Holy Writ, seek for traces of

that loss of animal life which must ever be a consequence of any great change or loss in the temperature and vegetation of the earth ?

Such a revolution, although no details are given of its operations, is clearly implied in the effects which are recorded in this simple language of Scripture :—

" And unto Adam, he said, Because thou hast hearkened unto the voice of thy wife, and hast eaten of the tree of which I commanded thee, saying thou shalt not eat of it:—*Cursed is the ground* for thy sake;—in sorrow shalt thou eat of it all the days of thy life;—*thorns also and thistles shall it bring forth to thee;* and thou shalt eat the herb of the field. *In the sweat of thy face* shalt thou eat bread,* until thou return unto the ground; for out of it wast thou taken; for dust thou art, and unto dust shalt thou return."

That earth which had hitherto profusely yielded, *freely* and *gratuitously,* its choicest productions, now shrinking beneath the frown of Him, before whose wrath all nature trembles, refused to supply even the common necessaries of life, unless wooed into compliance by the sweat of man's brow, and the toil and labour of his hands.

Can a more convincing proof be required of a change of temperature, and of the first great revolution on the earth?

Or, can it be thought necessary to assign to the fossils of the secondary strata a more remote period than this, in all probability, the first few months of man's existence upon the globe?†

Should such proof be required, it may at once be derived from the character of the fossil flora of the earth's strata, which although now abundantly found in northern latitudes, is wholly of a *tropical form,* and consequently the temperature of those countries must undoubtedly have been much higher formerly than at present.

It is unnecessary to enlarge here upon the several means which were instrumental to this change, and enough has been said to show, that to this epoch I would refer the extinction, and imbedding in the secondary deposits of the exuviæ now under consideration, and it therefore only remains to state, that these marine formations as they are termed, remained in the bosom of the deep until the period of the second revolution or Mosaic deluge, when the mountains in which they now occur were upraised, for the purpose of throwing back the waters from the surface of the earth into their proper beds; to serve as agents, from their accumulations

* That is—" by labour."

† I am well aware, that many will object to this, that man did not exist upon the earth until long after the period here spoken of; but I shall be able hereafter to give proof that such doctrine is not only unfounded, but actually opposed to facts.

of snow, in reducing still more the temperature of the earth, and in furnishing those supplies to the rivers and streams, which are so essential to the welfare of organised creation; and, lastly, perhaps it may be added, to stand forth with their imbedded fossils as eternal and convincing monuments of man's fall and punishment, and of the truths so simply stated in the Scriptures.

My own opinions lead me to conclude, that when the waters of the ocean had risen over, and, as in the beginning again enclosed the earth in its cold embrace, and had effected the punitory offices for which it was permitted to transgress its bound, the lofty mountain ranges which now adorn the surface of our earth were successively upheaved through the agency of *submarine* volcanic powers, forming in the depths of ocean vast indentations or depressions, corresponding in magnitude to the masses which were upheaved upon the *opposite surface*, and into which *depressions* or *vacuities*, by the laws of nature still in force, the waters would have rushed or risen, forced down as they were by the pressure of the superincumbent atmosphere, and thus as each successive upheavement took place, the waters being *drawn downwards* would have again retired from the surface of the earth, into the place appointed to receive them; the same as on that third creative day when, as recorded in the Scriptures, they were commanded "to gather themselves together, that the dry land might appear."

Nor does this theory of submarine upheavements appear to be unsupported by the opinions of able geologists, for we find in the words of Dr. Buckland, "that *trachyte* and *lava* being ejected through apertures in *granite*, prove that the source of volcanic fires is wholly unconnected with the pseudo-volcanic results of the combustion of *coal*, *bitumen*, or *sulphur*, in stratified formations, and is SEATED DEEP BENEATH THE PRIMARY ROCKS."*

Among the vast mountain ranges which were then upheaved, the Himalya stands pre-eminent, and as it rose towering upwards from beneath the waters of the *deluge*, the lake in question, and doubtless many more, may have been borne on high enclosed among its loftiest ridges. If such were the case, its waters which at first were salt, would afterwards have become fresh, from the cause already stated. Or if no such lake were borne aloft, then must it have accumulated in after times from the snows above, until bursting through the barriers of *gneiss*, which had hitherto confined it, the valley would have been left nearly as we find it in the present day.

The solution of the problem must therefore be sought for in the strata and appearances which the valley now exhibits.

* For an illustration of this, see Fig. 5.

Those phenomena and appearances have already been stated, and it therefore now only remains to show, that they are precisely in accordance with the theory proposed, and prove it to be correct.

When the vast ranges of the Himalya burst upward through the watery shroud which had hitherto enclosed the earth, the lofty ridges which surrounded the lake became at once the eternal reservoirs of everlasting snows, from which numerous streams descended, as in the present day.

The waters of the lake itself were *salt*, being taken from the ocean, and they gradually yielded to the streams which descended from the heights, until they became first *brackish*, and finally *fresh*.

The largest body of water which was supplied from the snows was that of the Spiti river, and to its current are partly attributable the appearances of the present valley.

Let us then look well to the mode of operation.

The *lake* was *salt* or marine; its waters after the agitation caused by the upheavement had ceased became tranquil, and as their nature began immediately to undergo a change from the influx of the snow streams, a deposit from its waters commenced. That deposit I hold to be the bed of friable or earthy *gypsum*.

The reason why it occurs at the lower end of the lake is this:—The downward rush of the Spiti waters from the heights of the *Paralassa* range, caused a strong current to advance far onwards into the valley, where it became less and less rapid, till it died away, or was checked by the body of water below.

Thus we may at once perceive, that while the fresh waters usurped the upper portion of the valley, the middle and lower parts were occupied by *brackish* and *salt* waters respectively—a circumstance that may be fully understood by observing the confluence of a large river with a gulf or any part of the sea. The river is fresh, the junction *brackish*, and the ocean *salt*.

The *gypsum* or *sulphate* of *lime* would therefore naturally be precipitated in the greatest quantities at the lower end of the valley, where the waters were the saltest, and the bed would gradually become thinner as it advanced into the intermediate part where the lake was brackish, and it would be wanting altogether in the upper part where the waters were fresh. This is precisely the fact, for the upper end or head of the Spiti valley is free from the *gypseous* deposit, while towards the middle we find the rocks often incrusted with it, or forming with fragments of *shale* and other rocks a *gypseous breccia*, which becomes less *crystalline* as it advances to the lower end of the district, where it yields to the thick beds or deposit of friable *gypsum*.

While this deposit was precipitating from the changing waters of the lake, the streams from the snows were bringing in large quantities of fine alluvial particles, such as *sands* and *clays*, and water-worn *stones* of various size.

These were deposited above the *gypsum* of the lower end of the valley, and passing on after that had ceased, reached to the upper end of Spiti. This too, is seen to be the fact, for the beds of *clay* are found not only covering the *gypsum* to a great depth, but also occupying its place at the upper extremity of the district.

At the same time, the waters carried onwards an uniform solution of *clays*, which they precipitated throughout the valley, the heavier *stones* and *boulders* were forming beds at the points where the streams fell into the lake. A reference to the annexed section will show the order and disposition of the various deposits which this valley contains, and serve to illustrate the foregoing remarks :—

(See plate) Fig. 8.

Section of the Spiti Valley.

Let 3. 3. represent the fall or present line of descent of the river Spiti from Leedung 12,037 feet, to Chungo 9897 feet above the sea.

It will be at once apparent that the waters of the lake must have had an increasing depth towards the lower end of the district, and that they were fresh about A ;— brackish about B ;—and salt at C. The *gypsum* was therefore deposited at the lower end, and is represented as lying within the triangle 2. 2. 3.

At the same time, above this *marine formation* a thick stratum of alluvial deposits took place, forming a *fresh water formation* throughout the valley, as represented within 1.1. 2. 2.

The height at 1. on the left hand is 12,037 feet at the village of Leedung, and the corresponding elevation at 1. on the right hand is the height of the aqueous deposit about Chungreezing above Chungo, which is also 12,037 feet, thus beautifully exhibiting the line of the former surface of the alluvium.

Above this the waters rose and filled the valley, till they procured egress at the lower end, beyond Leeo.

Thus from the appearance of the district we gather, that it has once been the bed of an extensive marine lake, whose waters having at length burst through their barriers, have escaped by the channel of the Sutledge.

This fact I consider to be indisputable, and it leads at once to a satisfactory explanation of the origin of the deep alluvial deposits of *clays*,

Section of the Spiti Valley

Fig. 8.

1.1. Former Level of Alluvium consisting of Clays, Sands and Pebbles.—
2.2. Former Level of Diluvium or Marine Formation consisting of friable Gypsum.—
3.3. Present Fall or line of level of the Spiti River from Leedung 12,037 feet - to Chungo 9897 feet.
4. Leedung Pass 15,247 feet above the Sea and site of Marine exuviæ

sands, and *pebbles* now seen in the lower parts of the valley of the Sutledge, to which allusion has been made in the commencement of this paper.

Having now, I trust, satisfactorily showed how the theory proposed, and the facts observable, are in accordance, it only remains, before bringing the subject to a close, to take a brief and rapid glance at the geological formations of the lower hills from Kotgurh to the foot of the mountains.

Taking that station, therefore, again as a starting point, and proceeding towards Simla, we find the formation to consist principally of *mica* and *clay slates*, the one constantly fading into the other, and occurring in frequent alternations.—*Quartz* veins are numerously interspersed in the beds of *mica*, which is sometimes of a soft and scaly nature, containing but little *quartz*,—at others hard and compact, exhibiting little trace of the *mica*.

The mountain of Huttoo, which rises near Nagkunda to the height of 10,656 feet of elevation above the sea, is composed of *mica slate* and *gneiss*, while its summit exhibits some rugged peaks of *granite* jutting upwards through the strata.

The soils which occur from Kotgurh to Simla, are formed chiefly from the decomposition of the *clay* and *mica slates*, with the addition often of a rich vegetable mould.

Descending from Simla towards Subathoo, the primitive formations again yield to the secondary series, exhibiting dark blue *limestones* and many alternations of *slate clay* of different colours; dull-greenish, yellowish, and purple. The latter is also seen as the poste or matrix of a *quartzose breccia* composed of angular fragments of *white quartz*.

Around Subathoo the change becomes the most decided, and the strata are there seen in perfection, consisting of the usual thick beds of *clays* and *marles*, varied with veins of *gypsum*, and resting on a red *marle*, apparently analogous to the red *marle* of England. The strata are here often upheaved nearly to a verticle position, and thick beds of shell *limestone** are found alternating with thinner strata of compact *limestones*, containing castes of bivalve shells, similar to the "*Venus angularis*" of the European strata. Large specimens of *Ostræ* also occur, as well as compact strata, almost entirely composed of small species of the fresh-water genera, *Melania* and *Poludina*.

The presence of these last prove again, beyond a doubt, that fresh water must have occupied eventually the basins in which the marine strata of the secondary series were deposited, and leads to the supposition, that nearly the same causes were instrumental to the formation of that series, as we have just shown to have been conducive to the deposition of the *diluvium* and *alluvium* of the Spiti valley.

* Strata composed almost entirely of shells.

Above these various alternations we find the *oolite*, with its strata of *sandstones*.

Captain P. Gerard of the Invalids, informed me that his brother, the late Dr. Gerard, had once discovered some *Ammonites* in the valley below Subathoo, but although I procured and fractured several of the dark rounded balls in which they often occur, I was not fortunate enough to meet with a specimen of the shell.

About eight miles from Subathoo, in an easterly direction, are rocks of a greyish *limestone*, rising above the *lias* and *oolitic* formation. Immediately underlying this are several strata separated by layers of flints of various forms, and imposed upon these, the *limestone* is first of all stratified and dipping in the same direction, namely, to the S. W.; but the superior portion of the beds rises in shattered and *amorphous* masses, giving a picturesque and beautiful appearance to the range. This *limestone* is quarried and used for economical purposes; it is of two kinds, one being of a pale dirty white or greyish colour, and is the stone from which the *lime* is procured, the other being darker and harder, emitting a strong sulphurous fœtid smell when fractured. This latter is little used, and appears to hold the lighter coloured variety imbedded in it in large masses.

The geological position of this *limestone*, coupled with the remarkable occurrence of layers of rounded and kidney-shaped flints, leads to the supposition, that it may be analogous to the chalk formation of Europe, and if so, it will follow, that the vast ranges of the Himalya, so long supposed to exhibit strata of *gneiss* and *mica schists* alone, will be found to present formations entirely analogous to those of other mountainous countries, even from the *granite* upwards to the *alluvium*, at present in course of deposition and accumulation.

The range on which Subathoo stands, exhibits another example of the effects of what I have termed a *double upheavement*.

Seen from the dâk bungalow of Chamier, the outcrop of the *sandstone* strata is seen dipping towards the N. Eastward, while the same rocks from which they have been torn, dip on the Chamier side of the Glen, towards the S. Westward.

But the N. Easterly dip is not the true direction, for we see again on the opposite side of the same range, that the strata dip likewise to the S. W.

Therefore, the deep valley or glen between the Subathoo and Chamier ranges is the line of disruption of the strata, causing them, as it were, to dip outward on either hand.

From Subathoo downwards to the foot of the hills, the strata belong to the *lias* formation, and gradually fade away until they yield at

length to the *sandstones* of the tertiary series, in which, at various places from Nahn to Buddee, the fossil exuviæ of extinct quadrupeds are found.

This, although but a faint and meagre outline of the geology of the noble ranges of the western Himalaya, is nevertheless sufficient to point out the *formations* which occur from the base of the mountains to Spiti and Ludāk, and is as much as could be done in a hasty tour over so extensive a field. I shall now, therefore, draw this somewhat lengthy paper to a close, by alluding to the means by which the imbedded exuviæ of these formations have been brought to light in these latter days.

I have already stated, that the fall of man is the true period to which the loss of the fossil marine *Mollusca* of the Spiti and Subathoo fields is to be referred.

At the time of their extinction, the secondary strata in which they are imbedded were under course of deposition in horizontal beds, beneath the bosom of a tranquil water, and thus they remained for a period of many years after.

The increasing depravity of the human race, once more called down the vengeance of an offended God, and brought about the second and last grand revolution which the earth has experienced, namely, the Mosaic *deluge*.

That catastrophe was the means by which the destruction of the large terrestial *mammalia* of the tertiary strata was effected.

When, therefore, the waters had performed the punitory offices for which they were allowed to transgress their bounds, the mountains of the Himalya were caused, among others, to rise upwards by some vast volcanic or upheaving agent, in order to throw back the ocean from the earth, and gather it again into the place appointed to receive it.

By that upheavement the primary series of the Snowy Range was thrust aloft in torn and ragged spires, while the secondary strata of Spiti and Subathoo then first rose upwards from their horizontal plane to the inclined position which they now possess. Consequent on the uprise of this secondary series was also that of the tertiary beds, and thus we find one single geological revolution to be the sole agent in upheaving the strata of three widely distinct and separate formations.

The Snowy Range or true Himalya, is composed entirely of rocks belonging to the primary series, while to the north and south of it are found resting on its sides, strata of the secondary formationsd isposed at high angles from the horizon, and usually rich in the exuviæ of marine and lacustrine *Mollusca;* while ont he southern exposure, forming the base of the hills, and resting on the secondary rocks, occur the tertiary or diluvian heds, which the successful researches of Messrs. Falconer, Durand, and others, in

the present day, have proved to be so rich in the exuviæ of the now extinct forms which once inhabited these countries. Whether this last series occurs also on the northern side, is a point for future investigation; but as fossil bones are sometimes brought down by native travellers from the Tartar hills beyond Almorah, it would seem that similar phenomena are to be expected there.

The inclined position both of the secondary and tertiary series, is clearly attributable to the outbreak of the primary rocks from beneath or through them and furnishes to the inquiring mind, a sure and beautiful guide by which the period when these vast mountain ranges first rose upwards to adorn our earth, may be satisfactorily and positively determined. The conclusion, therefore, to be drawn from the facts observable in these strata, are all strictly in accordance with the rules of geological reasoning, and I shall therefore now bring the subject to a close, by endeavouring to show the reasoning and existing facts to be in unison, and thus fix the period to which must be referred the stupendous and never-fading monuments of Almighty power, exhibited in the vast upheavements of the Himalyan range.

It is a fact accepted and admitted by geology as indisputable, that where one series of rocks having a horizontal position is found to rest upon another whose strata are inclined, it amounts to positive certainty, that the *deposition* of the *former* took place *subsequent* to the upheaving of the *latter;* and vice versâ, where both series are found, the one resting on the other at high angles with the horizon, that the deposition of the superior strata took place *previous* to the upheavement of those by which they are supported.

Resting on the *primary* rocks of the Snowy Range, we find on either side the strata of the *secondary* series thrown into an inclined position by the upheavement of the *granite* and its usual accompaniments of *gneiss* and *mica slates*, proving by their inclined position, according to the above reasoning, that they were deposited *previous* to the outburst of the former through them.

Again we perceive, that resting on the secondary rocks the tertiary or diluvial strata of the Siwalik range have also an inclined position, consequent on the upheavement of the *primary* and *secondary* series, and therefore, that they too, by a parity of reasoning, were deposited *previous* to the upheavement of the two former.

Now the *tertiary* or *diluvial strata* containing the fossil exuviæ of extinct terrestrial *Mammalia* are clearly attributable to the effects of the *last great revolution* which our earth has undergone, and consequently, we derive from the phenomena, presented to our notice in the various formations of the Himalyan mountains, sure and decided data for determining the period of

Fig: 9.

Imaginery Section of the Himalaya, shewing how the upheavement of the Primary Strata at 1. 1. 1 would cause the inclined position of the Secondary Strata at 2. 2 and the Tertiary deposits at 3. 4 Alluvium of the Plains.

their first upheavement, which period the facts adduced enable us to assign to the first subsidence of the waters of the *Moasic deluge.—(See plate)* Fig. 9.)

We may suppose, therefore, that when the ocean had been permitted to transgress its bounds, and had again enveloped the earth as in the time before the third creative day, or separation of land and water ; and had by its devastating effects fulfilled to the utmost the dreadful doom assigned to all organised creation, the vast and imposing ranges of the Himalya and other mountains were caused to burst upwards by volcanic agents from below, as a means of throwing back the waters from the earth into those bounds appointed to receive them, and also to furnish, by their subsequent accumulations of everlasting snows, a never-failing reservoir from which the rivers of the plains were to be supplied with waters to fertilize the soil; which plains, had the mountains been of inferior elevation, would for ever have remained barren and desolate, except during the prevalence of the periodical monsoon ; for it is apparent, that in the hot climates of the eastern world, no snows could have rested upon mountains of a lesser altitude sufficiently long to afford a never-failing supply of waters for irrigation.

Thus, even in the ordering of a mountain range, and the furnishing of wintery snows, is the wisdom and unvarying goodness of the Great First Cause, made manifest to the minds of his inquiring creatures.

To enter at length into the means by which these revolutions took place, and the reasons *why* they were allowed, belongs more properly to a system or theory of geology than to a paper professing to be merely an outline of the geological formations of a limited district.

I shall, therefore, for the present, leave the question in this imperfect form with less regret, since I purpose ere long, (should circumstances befriend me,) to lay before the Society and the Public a theory, which I would fain believe worthy of their most serious and attentive consideration.

Candahar,
19*th July*, 1840.

On the two wild species of Sheep inhabiting the Himalayan region, with some brief remarks on the craniological character of Ovis, and its allies.—By B. H. Hodgson, Esq. *Resident at the Court of Nepal.*

The great paucity of unquestionably wild species of the genus Ovis now found throughout the habitable globe, is a fact that has been employed to cast a speculative doubt upon my announcement (Catalogue of 1832 and 1838,) of two species in the single region of the Himalaya; and the circumstance of my not having been able therefore to give as full and satisfactory an account of the second species as I long ago gave of the first, (see Journal for September, 1835,) from living specimens, has tended to confirm the above mentioned doubt. I am still unpossessed of similar valuable materials for the illusrtation of this second species, having never been able to procure the animal alive, nor even to obtain a perfect suite of the spoils of a grown male. I have horns, however, of the mature ram, and sculls and skins of others, varying from one to two years in age; and from these, not inadequate materials, I purpose now to furnish a specific character of the Ammon-like, as well as (for the sake of comparison,) of the Musmon-like animal, together with craniological sketches and details relative to both; such as will suffice, I hope, to place beyond further question, the existence of two entirely distinct, new, and peculiar breeds of Sheep in a state of nature in the Himalaya; where indeed, from the unparalleled elevation and extent of the mountains, it need be no rational matter of surprise that they exist.

Ovis Ammonoïdes, Nob.—Large wild sheep, with massive strictly trigonal sub-compressed horns, deeper than broad at the base, presenting a flat surface vertically to the front, and cultrated edge beneath, inserted not in contact on the crest of the frontals, remote from the orbits, directed backwards and outwards with a bold circular sweep: the flattened points being again subrecurved outwards and the whole surface covered with numerous heavy complete wrinkles: the forehead flat and broad: the nose scarcely arched, and much attenuated to a fine small muzzle: the ears short, pointed, and striated: the tail short and deer-like, and the limbs fine and elevated: the vesture composed of close, thick, more or less porrect, brittle piles of medial uniform length, concealing a scanty fleece: no beard nor mane: general colour dull slaty

blue, paled on the surface, and more or less tinted with rufous: dorsal ridge dark and embrowned: lips, chin, belly, and insides of limbs near it, dull hoary: limbs externally, below the central flexures, rufescent hoary: snout to base of tail seventy to seventy-two inches: mean height forty-two: head straight to crest of frontals, fourteen: tail with the hair, eight: ears, six: horns, along the curve, forty.

Females smaller, with much smaller, compressed (?) nearly straight horns. Young, with the colours deeper and more sordid. Vulgo, *Banbhéra* and *Bhaărăl*.

Ovis Năhoŏr, *Nob.* Medial sized wild Sheep, with moderate, subtrigonal, uncompressed horns, presenting a rounded surface obliquely to the front, and a cultrated edge to the rear, inserted nearly in contact on the crest of the frontals, less remote from the orbits, and directed upwards and outwards with a semicircular sweep; the rounded points being again recurved backwards and inwards, and the general surface vaguely marked with infrequent rugæ: forehead broad and flat: chaffron arched: muzzle less attenuated: ears erect, short, and striated, and tail short and deer-like, as in the last: vesture or fur also similar, without beard or mane: general colour dull slaty blue, paled on the surface, and more or less tinted there with brownish or fawn: head below, and belly and insides of the limbs near it, yellowish white: face, or nose rather, fronts of the intire limbs, a connecting band along the flanks, whole chest and tip of the tail, black: no disk on the buttocks: their mere margin and that of the tail, paled. Snout to rump sixty inches: mean height thirty-six: head, as before, eleven: tail with the hair seven and three quarters: ears five and three quarters: horns along the curve, twenty-four. Females smaller, with small straightish, suberect, depressed horns, directed upwards chiefly, and with the dark marks on the limbs and chest less extended than in the male; frequently the chest is wholly unmarked. Young, with the colours deeper and more sordid; the marks still less extended, and wanting wholly on the chest and flanks. Vulgo *Năhoŏr* of the Nepalese.

N. B. Since the Prince of Musignano has published his account of the Musmon, it has become quite evident that our *Năhoŏr* cannot be identified with that species; and though the vaguer accounts of the Asiatic Argali render a like confident judgment in regard to the independence thereon of Ammonoides difficult of attainment, yet all

appearances warrant that conclusion. I proceed now to the osteology.

Dimensions of sculls and horns of (1) Ammonoïdes junior, (with horns of senior,); and (2) of *Nāhoŏr*.

		I.		II.	
		Ft.	*In.*	*Ft.*	*In.*
Scull.	Length from symp. intermax to crest frontals, ...	1	$1\frac{1}{4}$	0	$10\frac{1}{2}$
	Greatest height at the crest,...	0	$9\frac{1}{4}$	0	$6\frac{1}{4}$
	Greatest width between external margin of orbits, ...	0	$7\frac{1}{4}$	0	$5\frac{1}{4}$
	Diamcter of orbits, ...	0	$2\frac{1}{8}$	0	$1\frac{9}{16}$
	Symp intermax to tips of nasals,	0	$3\frac{1}{16}$	0	$2\frac{3}{16}$
	Length of nasals, ...	0	6	0	4
	Height or length of occiput to lower edge of great condyles,	0	0	0	$4\frac{3}{4}$
Horns.	Length of, along the curve,...	1	10	3 3 1	11
	Basal circuit of, ...	1	$1\frac{1}{2}$	1 $3\frac{1}{4}$ 0	$10\frac{3}{4}$
	Basal depth of, ...	0	$4\frac{3}{4}$	0 $5\frac{7}{8}$ 0	$3\frac{1}{2}$
	Basal width of (across,) ...	0	$3\frac{1}{4}$	0 $3\frac{1}{2}$ 0	$3\frac{1}{8}$
	Terminal interval of, ...	1	9	1 8 1	$9\frac{1}{4}$
	Basal interval of, ...	0	$0\frac{3}{4}$	0 $0\frac{3}{4}$ 0	$0\frac{3}{8}$
	Weight, ...	7lbs.		20lbs.	$7\frac{1}{2}$lbs.

The above are males, of which the *Nāhoŏr* is old, and *Ammonoïdes* about eighteen months to two years; but the second pair of the horns given are those of an old male.

The sculls of both have the same general character, possessing alike large flat foreheads, with the frontals half-developed on the posteal plane of the scull, which falls perpendicularly, and nearly at right angles from the anteal plane, whereon the frontals have an extreme breadth exceeding their length by one-third almost. The sculls of both alike have, moreover, the nasals somewhat arched; and half the anteal extent, with all the posteal, of the frontals is bounded by the broad proximate bases of the horns, which, however, extend over the true occiput in neither. The differences observable in the sculls are chiefly, that the orbits are more salient in the *Nāhoŏr*, and have no semblance before them on the lacrymal and malar bones of that roundish depression which in deer and antelopes holds the cuticular suborbital sinus:

whereas before the less salient orbits of the *Bhārāl*, that depression is palpably marked. Less marked discrepancies between the sculls are found in the greater arch of the nasals in the *Nāhoŏr*; the more complete concealment of the frontals superiorly and anteriorly by the bases of the horns; and the greater attenuation forwards of the maxillary and intermaxillary bones. In the horns the distinctions between the two species are very palpable; those of the *Banbhéra* being more massive, strictly trigonal, with a flat surface forwards, far more heavily wrinkled, and much more completely curved towards a circle, whence it results that the bases are thrown more off the forehead, and that the direction at first is parallel to the plane of the face. In the *Nāhoŏr*, on the other hand, the horns though ample, are neither as massive nor as long as in the *Banbhéra*. So far from being a perfect trigonal, the anterior half of them almost is broadly convexed: their surface is very much smoother; their divergency greater; their bend towards the circle far less complete, and consequently their bases lie more over the forehead, and they have for some way upwards, a direction much before the plane of the face. In the *Nāhoŏr*, the horns towards their tips are rounded or cylindrical, and are decidedly reverted out of the line of the first curve, backwards and inwards. In the other species, or *Bhārāl*, the characteristics of the horns in these respects are compression to flatness, and a less decided retroversion of the extremities, leaving the actual points directed forwards and outwards.

I shall conclude this paper with a general remark, which is, that the great depth or extent of the posteal plane of the scull, (comprehending half the frontal and all the parietal bones,) and the acute angle it forms with the anteal plane* in the genus Ovis, will be found to be characters of more permanency and moment in separating this genus and *Capra* from the nearest adjacent groups of Ruminants, than most of the diagnostics now employed; and that we have Cuvier's example in regard to the Bovine group to authorise our adoption of the additional and so much required mark as now suggested for the Caprine or rather Ovine. I subjoin an outline of the typical Antelopine and Cervine form of scull on one hand, and that of the normal form in *Ovis* and *Capra* on the other; and those only who would reject an essential part of

* The consequences of these peculiarities in the low position of the condyles of the lower jaw, and of the foramen magnum, are also marked.

the now generally recognised diagnostics of the groups of the *Bovidæ*, (Taurus, Bubalus, &c.) or who are ignorant of the shadowy nature of the existing marks of discrimination between Antelope, Ovis, and Capra, will, I apprehend, refuse to adopt the now suggested more enlarged application of Cuvier's principles. Either those principles are false, or this larger application of them is as legitimate as it is requisite. On these principles, (as on others,) *Cervus* and *Ovis* represent the extremes, and *Antelopa* and *Capra* the means: but there is a regular graduation from Cervus to Antelopa, from it to Capra, and from it again to Ovis; in such wise, however, that the two former fall naturally into one great group, and the two latter into another, *Cervus* and *Ovis* being the typical forms. And I may add as a proof how useful the new diagnosis now proposed is, and how harmonious in practice with other and admitted criterea, that, measured by this standard, our Hemitragus (the *Jharal*) is as clearly a caprine form as Ogilvy's Kemas (the *Ghoral*) is an antelopine one. Thus too the affinity of the Musks and Muntjacs to *Cervus*, however apparently anomalous they seem to be, is rendered palpably evident, and the soundness of our diagnosis consequently further corroborated.

With regard to *Ovis* and *Capra*, inter-se, Cuvier's 'forehead concave' for the latter, and 'forehead convex' for the former genus, are clearly erroneous marks; but those sometime since suggested by me, of 'males odorous,' and 'males not odorous,' as respectively characteristic of Capra and Ovis, I find confirmed by every day's experience: nor is this discriminative sign dependent, as supposed, on season in any degree, nor even on age after the animal has reached about four months, so soon is the odour developed in *Capra*.

Nipal, March, 1841. H. B. Hodgson.

Explanation of the Illustrations.

I.—1. 2. Front view of the horns and sculls of our two species of Sheep, to prove their distinctness.

II.—Sketch of Ovis *Nahoor*.

III.—Lateral outline view of two sculls, designed to exhibit the characteristic form in Cervus and Antelope (1) on the one hand, and in Ovis and Capra (2) on the other: and I may add, that the animals having been females, and not specially selected, the distinction contended for is thus shown to be peculiarly valid.

Plate I.

Plate II.

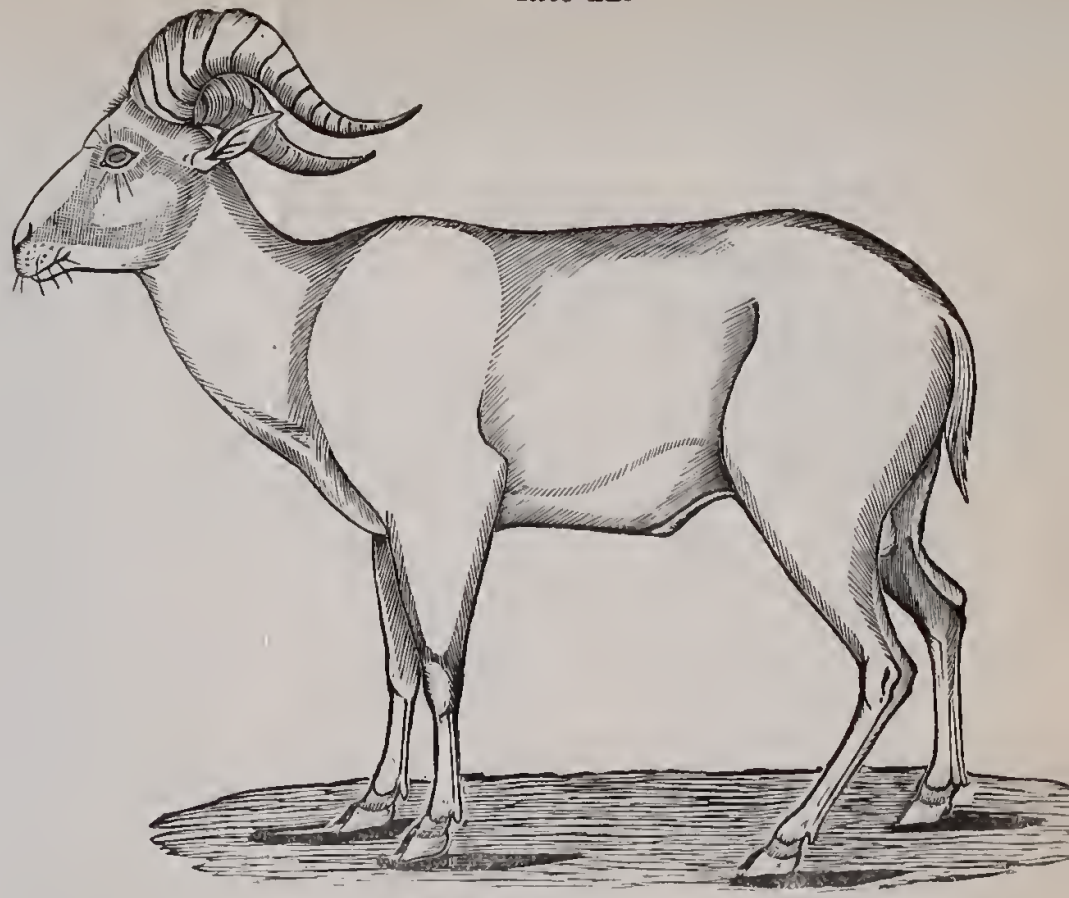
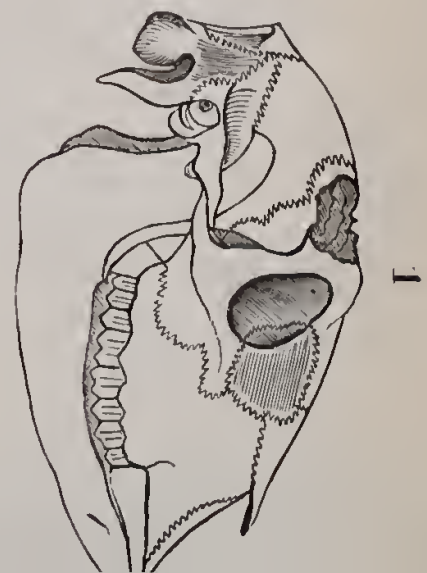


Plate III.



On the Laws and Law-books of the Armenians. By JOHANNES AVDALL, Esq., M. A. S. &c.

[This paper, Mr. Avdall informs me, was drawn up at the instance of Mr. J. C. C. Sutherland, who having referred to the author for information on the recognized sources of Armenian law, was answered by the production of this erudite paper. It contains a very clear exposition of a subject wholly unknown to general students, and mooting points of historical as well as legal interest.]

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An account of the first enactment of laws, instituted in Armenia, by the Armenian king Valarsaces, a descendant of the Arsacidæ, is recorded in the historical work of Moses Chorenensis, a Latin translation of which, with the Armenian text, was published at London, in the year 1735, by the two brothers, William and George Whiston. This Armenian historian, of venerable antiquity, enumerates in a successive and proper order, the rules and regulations enacted by Valarsaces, both for the guidance of the inmates of the royal palace, and of the citizens in general. "*Եւ օրէնս իմն Հաստատէ ՚ի տան թագաւորութեան իւրոյ. և ժամս որոշէ ելևմտից և խորհրդոց և խրախճանութեանց և զբօսանաց. . . Հրաման տայ քաղաքացեաց մարդկան արգոյ և պատիւ լինել քան զգեղջկաց, և գեղջկաց պատուել զքաղաքացիս որպէս զիշխանս. և քաղաքացեացն մի՛ կարի առ գեղջկօքն պերճանալ, այլ եղբայրաբար վարիլ վասն բարեկարգութեան և սննախանձոտ կենաց, որ է շինութեան և խաղաղութեան և կենաց պատճառք, և որ ինչ նման այսոցիկ:*" Ե. 7. "Legésque quasdam de aulâ suâ posuit, quibus exeundi et intrandi, consiliorum, et epularum atque oblectamentarum tempora distribuit. Ampliorem dignitatem atque honorem civibus, quàm rusticis haberi jubet; Rusticis, ut cives, tanquam principes, colant, imperat; Civibus, ne se erga rusticos superbè gerant, sed fraternam inter se vitam degant, honestè institutam, et ab invidiâ remotam, unde tranquillitas vitae et securitas, aliáque ejusdem generis sint oritura." *Lib.* II. *Cap.* VII.—From the foregoing facts it is evident that Valarsaces had

given a code of laws for the guidance of the Armenians. To have orally delivered these laws, without committing them to writing, was certainly unbecoming the enlightened and civilised reign of Valarsaces. But, of all the laws enacted by this king, one is repeatedly quoted by Moses of Chorene, which shall be mentioned below.

Laws enacted during the reign of the Arsacidæ, first by Valarsaces the Parthian, and afterwards by others.

In the foregoing chapter Moses Chorenensis writes thus about Valarsaces:—"**Եւ քանզի բազում ունէր ուստերս, պատշաճ վարկաւ ոչ ամենեցուն առ իւր կալ ի Մըծբին (ուր բնակէր յայնժամ ինքն Վաղարշակ.) վասն որոյ առաքէ զնոսա բնակել ի կողմանս Հաշտեհնից, և ի ձորն Նորին սահմանեաւ, որ է արտաքոյ Տարօնոյ. ի նոսա թողով զշէնս ամենայն հանգերձ յաւելուածով մտից առանձինն, և ռոճկաց կարգելոց յարքունուստ, և միայն զառաջինն որդին՝ որ կոչէր Արշակ, պահէ առ իւր ի համար թագաւորութեան: Եւ եղև այս յայնմ հետէ և առ յապայ օրինաք ի մէջ Արշակունեաց, միոյ որդւոյ բնակել ընդ արքայի, փոխանորդ լինել թագաւորութեանն. և այլ ուստերաց և դստերաց գնալ ի կողմանս Հաշտենից՝ յազգին Ժառանգութիւն:**"

"Caeterùm quum multos filios haberet, parum utile esse ratus, ut cuncti ad Nisibim manerent, in provinciam eos Hastensem dimisit, et ad Zoram, quae fines ejus contingit, trans Taronem sitam; illisque universa ea oppida attribuit et stipendia insuper de gazâ regiâ singulis statuit; at ex filiis suis, natu solùm maximum, Arsaces ei nomen erat, imperio destinatum. Deinceps inde consuetudo Arsacìdarum fiuit, ut unus de filiis cum rege habitaret, regni successor futurus, cæteríque filii ac filiae in regionem Hastensem ad possessiones suas abirent." Artavazd the First, moreover, conferred on the Armenian princes, possession of the provinces of Aliovit and Arberany.

“ Սա ժառանգեցուցանէ զեղբարս իւր և զքոյր ի գաւառս Աղիովտի և Առբերանոյ, Թողուվ ի նոսա զմանն արքունի՝ որ ի շէնս այնմ գաւառաց, Հանդերձ առանձին մտից և ռոճկաց, ըստ օրինակի ազգականացն՝ որ ի կողմանս Հաշտենից, որպէս զի լինել նոցա պատուականագոյն և առաւել Թագաւորացն քան զայնս Արշակունիս, միայն օրինադրէ ոչ կեալ յԱյրարատ ի բնակութիւն արքայի:” Ք.

21. “ Is fratribus suis ac sororibus possessiones in provinciis Aluhotensi et Arberanensi dedit, regeúmque eis vectigal attribuit, quod ex provinciae ejus oppidis redibat, propriumque ipsis stipendium insuper statuit, de more cognatorum, qui in regione Hastensi habitabant, ut honoratiores essent, atque adeò ad regeam dignitatem propiùs accederent quam Arsacidae caeteri ; lege tantùm sanxit, ne Araratam, quae erat regia habitatio, incolerent.”—*Lib.* II. *Cap.* XXI.—Sánátrúk also sent the daughters of Abgarus to that part of the country, about which Moses of Chorene says:—“ Զամենայն զաւակ տանն Աբգարու մշեաց սրով բաց յաղջկանց, զորս եհան ի քաղաքէն (Եդեսիոյ) բնակել ի կողմանս Հաշտենից: ” Ք. 32. “ Sed omnem Abgari stirpem, praeter puellas, ferro sustulit, quas, ex oppido eductas, in provinciâ Hasteniâ collocavit.” *Lib.* II. *Cap.* XXXII.—Following this example, Artavazd the Second, sent the other princes to those provinces. “ Հալածէ յԱյրարատոյ զամենայն եղբարս իւր ի գաւառս Աղիովտոյ և Առբերանոյ, զի մի՛ բնակեսցեն յԱյրարատ ի կալուածս արքայի, բայց միայն զՏիրան (զեղբայր իւր) պահէ փոխանորդ իւր, զի որդի ոչ գոյր նմ: Ք.

58. “ Artavazdes omnes fratres suos ab Araratâ in Aluotam et Arberaniam provincias pepulit, ut ne Araratam ac possessiones regias incolerent. Tiranum modò secum retinuit, regni successorem, cum sibi non esset filius.” *Lib.* II. *Cap.* LVIII.—The royal descendants having permanently settled in these parts of the country, began to

increase and multiply, and after the lapse of several years, the number of their offspring became very considerable, so much so, that an appeal was made by them to Tiran the First, touching the insufficiency of the provinces allotted for their habitation, to contain such an increased and increasing number of inhabitants. Moses of Chorene says: *" Եւ եկեալ առ նա կանխագոյն իւրոյ ազգին Արշակունեաց որ էին ի կողմանս Հաշտենից, ասեն. ընդարձակեա՛ մեզ զժառանգութիւնս զի նեղ է, քանզի բազմացաք. և նա հրամայէ ամենից ի նոցանէ երթալ ի գաւառն Աղիովտի և Առբերանոյ. իսկ սոցա առաւել ևս բողոք կալեալ առ արքայի, թէ առաւելագոյն նեղ է մեզ, ոչինչ ունկնդիր լինի Տիրան, այլ հաստատեալ վճիռ՝ ոչ այլ ժառանգութիւն տալ նոցա, բայց զոր ունին հաւասար տրոհել յինքեանս. զոր բաժանեալ ըստ մարդաթիւ՝ գտաւ պակաս ժառանգութիւն բնակողացն Հաշտենից. վասն որոյ բազումք ի նոցանէ եկեալ ի գաւառն Աղիովտի և Առբերանոյ:"* ¶. 59. " Caeterùm brevi tempore interjecto ad eum gens sua Arsacidarum venit, quae Hastenios tractus havitavit, dicens, " profer nobis haereditatis fines, quae arctae sunt, cùm simus admodum multiplicati." Ille verò eorum nonnullos in Aluotam et Arberaniam provincias migrare jussit; cùmque ii ad regem acriùs clamarent, regionem eam ipsos nimis coarctare, Tiranus, nihil annuens, Edicto sanxit daturum se eis haereditatem aliam nullam; quam tenebant, aequaliter inter se dividerent. Quam cum pro hominum numero partiti essent, incolis minimè sufficere Hastenia reperta est, ac propterea multi eorum in provincias Aluotam et Arberaniam commìgrârunt." *Lib* II. *Cap.* LIX.—Immediately after the death of Khosrow the Great, when Ardashir, king of Persia, made an aggression on Armenia and conquered the country, he extended his royal munificence and support to these descendants of the Armenian kings. For the said venerated historian says: " *Իսկ Արտաշրի գեղեցկապէս յարդարեալ զաշխարհս*

Հայոց՝ ի կարգ առաջին Հաստատէր, նա և զԱրշակունիան (զարքայորդիսն) զմեկուսացեալսն ի Թագէն և յԱրարատեան քնակելոյ կարգէ ի նոյն տեղիս մտիւք և ուճկօք որպէս էինն:" Ը. 74. Tum Artasires Armeniae terram egregiè ornavit, atque in antiquum statum restituit. Arsacidas ab regno et domicilio Araratensi pulsos, in eundem locum reduxit, et eadem eis, quae priùs habuerant, stipendia statuit." *Lib.* II. *Cap.* LXXIV.

Of the Satraps of Armenia.

History also tells us, that there were specific laws extant for the guidance of the Satraps of Armenia. Faustus of Byzantium, who wrote an Armenian history in the fourth century, alludes to the existence of certain laws, which seem to have obtained in Armenia only during the reign of Khosrow the Little. "Posterior to this," says Faustus, "the Persians were incessant in waging wars with the king Khosrow. Laws were, in consequence, enacted by the king for the guidance of the Armenian satraps, grandees, chiefs, and lords, whose number was very considerable, and on whom it was made obligatory to remain near to their royal master, and none of them were permitted to accompany the expedition against the king of Persia. This measure was adopted by Khosrow, from a want of confidence in the sincerity of the attachment of the nobles of his court. The terror of the disloyalty of Databi had seized upon his mind, and he apprehended the occurrence of a similar event in his own country." *Faustus. Lib.* III. *Cap.* VIII.

Laws enacted during the reign of the Bagratidæ.

Of the laws enacted during the days of the Bagratian kings, no record has been preserved in the annals of the Armenian historians. But, from ancient Armenian manuscripts, found at Lemberg or Leopolis, a city in Poland, it is ascertained that the Armenians, who emigrated in the eleventh century from the thickly populated city of Ani,* and other provinces of Armenia to that part of Europe, had carried with them the code of laws by which they were guided in their own

* Ani was a most magnificent and populous city in Armenia towards the close of the tenth century, and contained one thousand and one churches! See my History of Armenia, vol. II. p. 92. It is nothing now, but a heap of ruins.

country. This code of laws was translated into Latin in the year 1548, by order of Sigismund the First, king of Poland. It is greatly to be regretted that not a single copy of this Latin translation of the Armenian code of laws has made its way to British India. It is, however, consolatory to learn, that this translation is to this day preserved in the library of the Armenian College at Venice. Sigismund writes thus in the preface to that code of laws: "Although we have to this day sheltered and protected the Polish Armenians, our subjects, under their own Armenian privileges and laws, by which our predecessors had acknowledged and governed them, but on the occurrence of dissensions and disputes between them and the citizens, it was thought necessary to have that law-book of theirs, which was written in the Armenian language, and which was only understood by themselves, translated by them into Latin, and presented to us in that form, so that every cause of suspicion and collusion should be removed, and that we should, by the help of the members of our council, make judicious inquiries into its contents, and, by a slight alteration, confirm the same." After writing thus far, he mentions the name of Johannes, the Bagratian king, and cites his mandate in the following manner: "Johannes, by the grace of God, king of Armenia, during the days of his auspicious reign enjoined, not to open courts of judicature on Sundays—not to borrow money—not to prefer claims against debtors; and made other similar enactments for the observance of Sundays." After this he adds: "It is enjoined by the Armenian king Theodosius, (perhaps Ashot,) of happy and blessed memory, and other orthodox Armenian kings and princes, to render justice and equity to all—to cities, towns, villages," *et hoc genus omne.* These quotations are corroborative of the existence of laws and law-books in Armenia, during the reign of the Bagratidæ.

Of the succession of Kings.

Although after the subversion of the kingdom of the Bagratidæ, we meet with a specimen of the law of succession in the commencement of the code of Mechithar Ghosh,* yet it is evident that this law was in

* Mechithar Ghosh flourished in Armenia towards the close of the twelfth, and the beginning of the thirteenth century. Besides his code of laws, he is known to be the author of several other valuable works in the Armenian language. *Ghosh* is the cor-

force in Armenia during the reign of the Bagratian kings, with some slight variations. In the days of the Arsacidæ the crown devolved from son to son in a lineal succession; but the law of the Bagratidæ confers the right of succession upon brothers. There are also some other laws, of which I shall furnish the reader with an extract: "Although," says this legislator, "the crown by right devolves upon the first-born, yet the most eminent for his wisdom is to succeed to the throne. So long as the king's brothers survive him, his sons are debarred from a succession to the throne. But, on the extinction or demise of the brothers, then the crown devolves upon the king's sons. Should the king leave a daughter surviving him, she is to be invested with the title of nobility, and is, together with her husband, entitled to one-half of a share of a brother. And, on the demise of kings, if there be a son from the son, and a son from the daughter, the son's son is to succeed to the throne, but not the daughter's. And so long as there may be descendants of the son, the daughter's children are debarred from succession, at which any attempt made by the latter is unlawful and unjust. For, it was in this manner that our king Abgarus enacted laws for the succession to the throne of Persia. And the patriarch Noah apportioned to the sons and the daughter, the regions of the southward, as women also rule over those parts."— Then the legislator describes the manner in which the succession is to descend when there be only a daughter, but no son surviving the king. Or, if there be no heir to the king, then the right of succession devolves on his kinsmen, one of whom only is to reside at the royal palace near the king, and the rest are to be domiciled at a distance, according to the custom prevalent among the former kings of Armenia. All this is written by Mechithar Ghosh, in the commencement of the second chapter of his code of laws. By the last quotation, the legislator means to allude to that usage of the kings of the Arsacidæ, of which mention was made above. The law of succession was not, however, kept inviolate during the reign of the Bagratidæ, among whom there were

ruption of the Persian word كوسه corresponding with բուրդ or բոլոգ or vulgò բոսուկ in Armenian. This appellative cognomen was added to the Christian name of the Armenian legislator, in consequence of his having very little or no beard. By this distinguishing appellation he is invariably mentioned throughout the works of his cotemporaneous writers, and in the page of our national history.

found some pretenders and upstarts, who created disturbances by disputing the right of succession. The collision of Atshot with his brother Johannes, is a remarkable instance of this dispute.* But, during the reign of the Arsacidæ, the whole of the royal descendants, with the exception of Sánátrúk, adhered to this law of succession.

Some other items of the Laws of the Bagratidæ.

Taxes are alluded to in the second chapter of the code of Mechithar Ghosh, who treats of the royal courts of judicature, and of those subordinate thereto: "Kings and princes," says this legislator, "ought justly to impose taxes on lands and nations, and not to exact more than what is tolerated or allowed by immemorial usages. They will have to render an account of their stewardship to the great God. They were appointed for the preservation and welfare of the country, but not to entail ruin and misery upon the people placed under their government. The imposition of taxes ought to be in the following manner: one-fifth of the produce of cultivated lands is to be given to the state. Lands, gardens, and orchards, purchased by the people, are not to be subjected to this tribute. Watermills and houses are in like manner to enjoy this exemption. The inhabitants are to be taxed for the trade in which they are respectively engaged, and the commodities which they offer for sale. Christians are considered exempt from a poll tax, which is only to be imposed upon unbelievers. Irrigated lands are subjected to a tribute of one-fifth of their produce, and affranchised or quit lands are subject to the payment of tithes. Because the right of kings and princes extends only to earth, but not to water, affranchised lands, orchards, and gardens, are also exempt from taxation. In like manner, of the seven days in the week, one is to be devoted to the royal service. To demand from labourers more than this, is a great injustice. No specific tax is to be imposed upon oxen, besides that of one-fifth alluded to above. A pound of butter is only to be levied upon each cow. Pasture-grounds are exempt from the tax which is imposed upon cattle that graze therein. The sheep are to be tithed in their lambkins, which can be exchanged with the sheep *ad libitum*. Horses, mules, and asses, are not to be taxed, because by the

* Vide my History of Armenia, vol II. p. 109.

help of these animals essential services are rendered to the government of the country."

From the same chapter of the code of Mechithar Ghosh, we shall quote what relates to the administration and law of precedence of the ancients. " It is unjust in princes to impose a tax upon believers, because the unbelievers are alone to be taxed. It is proper to exact tribute from the latter, but not from the former, as it is done by the Georgians to those placed under their subjection. When a tract of land is granted by the crown to an Armenian nobleman,—if a fort be raised on it by the latter in accordance with the royal consent, or if a village be constructed thereon, or if ruined buildings be repaired thereon,—then, and in that case, the same tract of land is to devolve on him and his heirs in perpetuity. The land so granted is by no means to be alienated from him without a very serious and heinous offence. And, after the death of the person or persons on whom that land is conferred, the gift is to devolve on his, her, or their, descendants by order of the king. In like manner, nobles are to be next to princes, according to the seniority or priority of the latter, and citizens and peasants ought to be subordinate to nobles.—Forests cleared, and ruined places repaired or rebuilt, are to be the undisputed and inalienable property of the enterprising persons at whose expense the works were performed, and are to devolve on their children in perpetuity after their death. On the construction of a city or fort, should there be a deficiency of money in the public treasury, it is incumbent on the people to render their general support towards the completion of the building. Citizens are to enjoy the honor of precedence to villagers, and inhabitants of villages should precede in rank the farmers and husbandmen. This law of precedence is, in like manner, to obtain among the denizens of forts and villages. These have been the usual and invariable practices among the ancient kings of Armenia." The concluding portion of this quotation alludes to the usages prevalent in our country during the reign of Valarsaces, as stated above.

Courts of Judicature, and Codes of Laws in Armenia.

In our national history mention is made of the institution of courts of judicature by Valarsaces, during the days of the Arsacidæ, as it appears from the testimony of Moses of Chorene, while speaking of the

public acts of this monarch. "**Իրաւարարս ի տան արքունի, իրաւարարս ի քաղաքս և յաւանս: Բ. 7:** "Judices in aulâ regiâ, judices in oppidis villísque statuit." *Lib.* II. *Cap.* VII. Where there are judges, there must of necessity be courts of judicature, in which judges and arbiters hear causes, and administer justice by the employment of officers and subordinates, without whom judicial affairs cannot be properly managed and conducted. But, that there were actually courts of judicature in existence in Armenia, we have conclusive and satisfactory evidence in the work of that ancient historian. **Գիւղից և գաւառաց, ևս և իւրաքանչիւր տանց առանձնականուեց, և Հանուրց ՀակառակուԹեանց և դաշանց, այժմ առ մեզ գտանին անբաւ զրուցաց մատեանք, մանաւանդ որ ի սեպհական ազատուԹեն (նախարարուեն) պայազատուէ: Ա. 2:** "Quibus adhuc devicis at provinciis, atque etiam rebus sigillatim domesticis, publicisque controversiis, ac fœderibus, scripta extant apud nos innumera historiarum volumina, ac praecipué dum successio mansit libera." *Lib.* I. *Cap.* II. It is evident that such codes of laws and instruments regarding which disputes and differences might have naturally arisen, by the lapse of several years, among heirs, coheirs, and legatees, were carefully kept in courts of judicature, conformably to the order of the government of the country. This has been the common and invariable practice of civilized nations, in all ages and in all countries.

We have also incontrovertible proofs of the existence of law-books in Armenia during the reign of the Bagratidæ, in the Latin translation of the code complied and prepared under the auspices of the Armenian king, Johannes the Bagratian, of which mention was made above. The classification of the chapters of this code is preceded by this sentence:—"The Armenian kings lay down this model of justice for the guidance of their judges."—Then follow, in separate chapters, laws respecting the adjustment of disputes arising from wills—laws enacted for the settlement of differences among married parties—and laws intended for the correction of offenders and the punishment of criminals.

In the face of all these evidences, one cannot but be greatly astonished in reading the introduction to the code of Mechithar Ghosh, where-

in he frequently alludes to a total absence of laws and law-books among the Armenians, and to the consequent necessity of his collecting data, and embodying them in the form of a code of laws! In the second chapter of his law-book, the heading of which is, "Why were we disposed to compile this book, or what incentives induced us to resolve on framing this code?" Mechithar Ghosh furnishes the reader with a statement of his reasons for so doing, of which the following is an extract:— "That we have often been accused not only by unbelievers, but by Christians also, of a total absence of law-books, based upon the principles of evangelical laws. That lest, from the non-existence of a written law, the Armenians should apply or appeal to unbelievers for justice. That many, on various occasions, ignorantly distort the true meaning of laws, and it is for their information and correction that we were induced to compose this code of laws. Not content with this alone, we caused this code to be placed in courts of judicature, as a record intended for occasional and necessary reference. That being destitute of written laws, our predecessors were unable to make references, but, on the removal of this want, we shall now avail ourselves of this record, and be able to afford a proof to unbelievers of the existence of written laws amongst us, by which they will be silenced, and obliged to desist from heaping on us accusations for the apparent want of a code. We were for a very considerable time subjected to the keenest reproaches of our countrymen and strangers for the absence of a law-book, and their censures proved as a spur to us in undertaking the preparation of a code of laws....I was also seized with astonishment at the apathetic indifference displayed by our ancestors in not supplying this desideratum."

These remarks were written by Mechithar Ghosh, towards the close of the twelfth century, at which period, as stated above, he flourished in Armenia in the character of an Armenian lawgiver, and erudite author. But, as the numerous Armenian families that first quitted Armenia emigrated to Poland in the middle of the eleventh century, it is very probable that these emigrants carried with them their own law-book, which it was impossible for Mechithar Ghosh to meet with in Armenia. The Armenian colonists in Poland being in possession of a law-book of their own, were guided by it in all their civil and judicial affairs, as stated above. Yet, upon all this, considering the laws al-

luded to by him, relative to the prerogatives of kings and the rights of princes, we are led to conclude that Mechithar Ghosh was at least possessed of some fragments of the laws of the kings of the ancient Bagratidæ and Arsacidæ, otherwise he would have candidly declared that the code was entirely his own production. This carries with it its own improbability. And it is not injudicious to adopt this conclusion from the perusal of the second chapter of the prefatory observations of his law-book, in which he says:—"This string of laws will perhaps be considered an object of ridicule by those in whose hands it may chance to fall! They will assimilate us in their mind's eye to those who, in a fit of delusion, dream of kingdoms and of royal splendour and glory; but no sooner they are awakened from their illusive and enchanting dreams, than they see nothing but the mere shadow of what their heated imagination had portrayed in glowing colours! But, let them remember that I am not ignorant of the vanity and transitoriness of all earthly kingdoms! Of this we have a most singular and striking proof in the rise, progress, and annihilation of our own kingdom. The past has vanished for ever—the present is a mere tantalising nonentity—the future I can scarcely hope to see! Yet, these distressing circumstances and melancholy reflections will not be permitted to cool my ardor in prosecuting the task of framing a complete code of laws, conformable to the wants and present state of the nation, from the conviction, that the utility of my production will be generally acknowledged and duly appreciated. In attempting to publish and promulgate this work, I must crave the kind indulgence of unbiassed observers; and, in so doing, I stand fully prepared to be visited with the censures of hasty and fastidious critics, for such errors and imperfections as may be found in this production of mine. Yet I still entertain a hope, that they will consider me worthy of credit for good intentions, though they may not be disposed to extend to me their pardon for the defects of my work." From these observations of Mechithar Ghosh it is to be inferred, that the laws contained in his book were not *bonâ fidé* his sole production, but a compilation from those framed by ancient Armenian law-givers. In preparing this article on the laws and law-books of the Armenians, I have availed myself of Inchichian's "*Antiquities of Armenia*," a work published at Venice in 1835, and replete with deep research and

most valuable information. If the Mechitharistic Society* of Venice be disposed to publish a correct edition of the code of Mechithar Ghosh, and of the book of laws prepared under the auspices of the Armenian king, Johannes the Bagratian,—authentic copies of which are preserved in the extensive library of that learned body,—they will certainly confer a very heavy obligation on their countrymen generally, but more particularly on the Armenians located within the pale of the government of British India. An approved and unexceptionable edition of these two statute-books of the Armenians, cannot but be most servicable to the judges of the Sudder Dewany Adawlut, who will be entirely guided by them as by an unerring criterion in their decisions on causes and questions arising from hereditary gifts and testamentary bequests of the Armenians residing under the jurisdiction of the Mofussil courts. But in the absence of printed Armenian law-books, questions of succession to property, in cases in which the litigants were known to be Armenians, have been invariably referred in writing by the judges of the Company's courts to such of the Armenian bishops as happened to sojourn or itinerate in this part of British India, during the period of their triennial or septennial episcopal visitation, which they performed in accordance with the written and acknowledged authority with which they were respectively invested by the pontificate of Etchmiatchin,† near Erevan, in the province of Ararat, the archbishoprick‡ of Julpha in Ispahan, and the patriarchate of Jerusalem,§

* This veteran Society was established in the year 1717, and its members have been pre-eminently successful in the revival and cultivation of the classical literature of Armenia, by the publication of numerous philosophical, philological, and scientific works of sterling merit. The members of this Society lead a strictly monastic life. The following lines are extracted from the life of its zealous and patriotic founder :—

" Մենաստանս այս ըստ բոլորին
Հինեալ եղև 'ի փառս Փրկչին ,
ՅաբբայուԹեան Սեբաստացւոյ
ՄխիԹարայ վարդապետին : "

"Fuit hoc monasterium totum tempore Mechithar Petri ex Sebaste I. Abbatis extructum. A. D. 1740."

† 'Ի կաԹուղիկոսարանէն Սբոյ Էջմիածնի :

‡ Յաւաջնորդարանէն Ջուղայու :

§ 'Ի Պատրիարգարանէն Երուսաղէմի :

to which each or any of them individually belonged. Sometimes, in the absence of Armenian bishops, the officiating Clergy attached to the Armenian church of Calcutta have also been consulted on questions of inheritance, or testamentary bequests. The exposition of the Armenian law or usage, furnished by these episcopal and clerical dignitaries of the Armenian church, in accordance with the specific queries put to them, has, almost in all instances, guided the judges of the Company's courts, either in determining similar questions pending *sub judice*, or in pronouncing their decisions in cases of the above mentioned description. The Company's courts, so far as my information extends, pursue the practice sanctioned by the precedents alluded to above.

In connection with the subject of Armenian laws and law-books, I think it necessary to add, that in June 1838, I was requested by my highly esteemed and deeply lamented friend, Mr. James Prinsep, to pass my opinion on a certain Armenian code of laws in manuscript, which accompanied his letter, for my perusal and consideration. I cheerfully undertook the task intrusted to me, and instantly put him in possession of my opinion in a letter, of which the following is a copy:—

To James Prinsep, Esq.

My dear Mr. Prinsep,

I have received your note of yesterday's date, together with a manuscript volume in the Armenian language, and hasten to put you in possession of my candid opinion on the same.

The book in question is a code of laws, both civil and ecclesiastical, written or transcribed in the Haican era 1135, corresponding with the year of our Lord 1686, partly by a priest named Alexianus, and partly by a bishop named Jacob, native of Ghrim, and pupil of another bishop named George, of the see of Ezinka. The transcription thereof was made at the desire of another bishop named Thomas, and inscribed to Stephanus, the supreme patriarch of the Aluans. The work is based on Mosaic laws, and the materials of which it is composed are derived from the Old and New Testaments, and from other ancient records.

Mechithar Ghosh, who flourished in Armenia between the close of the twelfth and the beginning of the thirteenth century, and who is eminently distinguished in the page of our national history for his unrivalled attainments, is known to have been the author or

originator of a code of Armenian laws, which was then generally used in the courts of judicature of our country. History also tells us that another code of laws was in existence in Armenia, so far back as the year of Christ 1046, written or prepared under the auspices of the Armenian king, Johannes Bagratian. The latter has been in general use among the numerous Armenian population of Poland, where a transcript of it is preserved, with a Latin translation; but the text or original work is not to be found. As neither of these law-books has found its way to India, I am unable to say whether the volume you have sent me is a transcript of the one or the other, for the name of the author or legislator has unfortunately not been inserted therein. I am, however, inclined to think it to be a compilation from both, but cannot take it upon myself to say, whether it is one of established legal reputation in Armenia. It is greatly to be regretted that the code of Mechithar Ghosh has never been printed or published to this day. This, under existing circumstances, is certainly a very serious evil to the Armenians living under the jurisdiction of our Zillah courts.

The following is a translation of a portion of the Chapter on Inheritance:—

"*Chapter CIV.—Of the division of Property.*

"Conformably to the rule of division, property must be equally divided in the following manner: that is to say, the whole of the property to be considered as one drachma, and the drachma as six oboli. If there be a son and a daughter in the family, the property must be thus divided: that is to say, two and a half oboli to the brother, two and a half oboli to the sister, and one obolus to the mother. But, if there be two sisters, and both of them married, the two sisters are to be looked upon in the light of one brother. Two and a half oboli to be given to the brother, two and a half oboli to the two sisters, and one obolus to the mother."

From this it will appear, that the wife or mother is entitled to one-sixth of the property bequeathed by the father or husband. This custom or usage, so far as my information extends, does to this day obtain among the Armenians residing in the various parts of Persia and Turkey. It is difficult for me to ascertain whether the Armenians living under the rule of Russia,* are equally guided or influenced bythis usage.

* A code of laws, bearing the affix of the imperial *fiat*, was concocted and published in 1836, for the guidance of the Armenians living in Ararat, one of the provinces of Armenia which is now under the sway of Russia. A copy of this code of

Herewith I return you the manuscript volume, with the contents of which I have already been made acquainted, by the kindness of its former owner.* Another copy of this work, though not so elegantly written, was in the possession of one† of the Armenian priests of Calcutta; but in consequence of his death, it was, together with his other books, sent to his son at Ispahan in January last. Should you require an English translation of any other portion of the work, I shall feel most happy to furnish you with it.‡

Believe me to be,

CALCUTTA, Your's very truly,

26*th June*, 1838. JOHANNES AVDALL.

laws in manuscript having been sent to me from Madras, I instantly put it into the press, and published a sufficient number of copies thereof for the numerous Armenians living in different parts of British India. The contents of this code are, however, inapplicable and scarcely of any use or benefit to my expatriated countrymen, scattered throughout this portion of the globe. Driven as we are from our country by Moslem despotism and unrelenting persecution—bereft as we are of our national glory and independence—wandering as we are on the surface of the globe like the scattered children of Israel, but partially domiciled here, under the fostering and paternal care of the British Government, I trust I shall not be taxed with presumption in expressing a wish, that a string of laws, well adapted and suited to the circumstances and general condition of the Armenians settled in this country, framed and concocted by the wisdom of the Legislative Council, be passed and promulgated by the Supreme Government of British India, with the view of promoting and securing the welfare of the children of their adoption. In asking this boon, I rest assured that it will be conceded to us by the illustrious and philanthropic head of our government.

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* The former owner of this law-book was the late Right Rev. Hárútheún Várdápiet **Սրբազան Տարօնեցի Վարդապետ** of the fraternity of the Armenian Convent of Julpha in Ispahan. In the year 1824, while residing at Sydabad with his brother, the late patriotic Manásácán Vardon, the Rev. gentleman was applied to in writing by Mr. G. C. Master, first judge of the Provincial Court for the division of Dacca, to state his opinion on a certain question of inheritance, arising from the will of a certain opulent Armenian inhabitant of that place. In complying with Mr. Master's request, this dignitary of the Armenian church availed himself of the contents of this very law-book. His opinion on the subject is justly and appropriately prefaced by these words—"All laws of justice, either civil or ecclesiastical, in all Christian nations, have their origin from the Holy Scriptures." The judges, I am credibly informed, were guided by his opinion in pronouncing their decisions. Hence, it is evident, that the book in question was considered by the judges as a sufficient authority. On the death of Hárutheún Várdápiet, the book alluded to became the property of his brother, Mr. Mánásácán Vardon, on whose demise it devolved on his eldest son, and is *now* in the possession of his youngest son, Mr. S. M. Vardon.

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† The late Rev. Ter Marcar Ter Carapiet, **Հանգուցեալ Սրբակրօն Տ՛ Մարգար Տ՛ Կարապետեան** formerly vicar of the Armenian church of Calcutta, of happy and blessed memory.

‡ The utility of piecemeal extracts from these manuscript Armenian law-books, will be temporary and confined to a few only. As several of the Armenian residents in the Mofussil, have a large and extensive property in lands and talúks, would it not be advisable for them to adopt measures for printing at the Armenian press in Venice the code of Mechithar Ghosh, and the law-book of the Armenian king, Johannes Bagratian? Let them come forward and supply the *sine quâ non*, and the long-desired object will be speedily and satisfactorily consummated.

On Tabular Returns of the N. W. Frontier Trade with Afghanistan.

[Profiting by the scope and character of this Journal, and following the system of the Society after which it is named, the Editor has not hesitated in publishing the following Tables, and the remarks upon them, as containing most valuable notice of a subject interesting to all in India. The information compendiously given in the above, was the result of private perquisitions, made at the instance of the writer of this note: it may be relied on as strictly accurate. The allusion to disadvantages opposed to traders from Cabool is only made, in order to show how great must the contrary advantage be, and how strong the impulse to trade, when, (as the writer believes to be the case,) they have now been removed by recent arrangements.]

EXPORTS.

British Manufactures and Island Produce.

The statement (No. 1,) embracing the trade of the year 1840, (from January to December,) in British manufactures and Island produce cannot, it is to be regretted, be pronounced thoroughly accurate, inasmuch as it is derived from data which is presumed to be imperfect. However, the quantity of each staple therein exhibited as having been exported to Cabool across our North-west Frontier, during the period under review, is, there is every reason to believe, by no means exaggerated; on the contrary, it may be said to fall far short of what actually found its way to the Northern marts, via Delhi, which is the great *entrepôt* of the extensive commerce of our North-western Provinces and Central Asia.

The correctness of the staples of trade given in the statement can be vouched for, and it will be observed, that cloths form the chief. Of the several descriptions of linen the most prized and sought after, is long-cloth, *(Luttah,)* the unbleached being preferred to the bleached; the Cabool merchants having discovered that our method of bleaching rots the thread, and abstracts a year's wear at least from the cloth; besides it enables them the more readily to dye it blue, their favourite colour.

Of all the export staples, British linen is said to give the greatest return, yielding a nett profit of nearly 100 per cent. on the outlay,

and to meet with the most ready sale, the merchants from Khiva, Bokhara, Khorassan, Samarcand, Lodauk, &c. &c. buying it up with avidity.

Our broad cloths, too, are eagerly sought after, (*sombre* colours are preferred to gay,) and immense quantities are said to be exported from Bombay. It is only the coarser quality that is inquired after here. The same remark applies to Birmingham and Sheffield ware, cutlery, &c. which is very much admired and prized; especially when contrasted with the miserable wares of Russia, specimens of which, when contrasted with the rudest workmanship of the Delhi artificers, have shown the comparison to be greatly to the prejudice of the former.

The next article in point of importance is metal, (lead, copper &c. the former in pigs, and the latter in sheets,) and of this it need only be said, that the demand for the Northern marts is greater than the supply here, *i. e.* the surplus supply—the home consumption being enormous.

Island produce, of which the several kinds of spices compose the principal export staple, (black pepper is the chief item,) will always exercise a very important influence on the Cabool trade; for, although not strictly coming under the term "necessary," the customs and habits of Asiatics render the consumption of Island produce, spices, beetlenuts, pigments, &c. a matter of course.

The trade, as will be seen in Island produce, has been tolerably brisk during the past year; but it would have been considerably more so, were it not for customs' restrictions.

Almost all articles of Island produce are subjected to port duties when imported seaward into Calcutta, and therefore, agreeably to the liberal principle allowed by Government, ought not again to be taxed any where within the Company's territories. This, however, is not, and cannot be done, inasmuch as most of the produce of the Islands is also liable to the payment of inland customs' duties; that is, they (vide margin*) are borne on the tariff, which regulates the levy of duty in the inland customs' houses.

* Spices, beetlenuts, logwood, pepper, long pepper and its roots, (called piplamoor,) sandal-wood, senna, camphor, benjamin, red earth, red lead.

A Cabool merchant, (to give an example,) purchases at Calcutta 10 maunds of black pepper, which he is told is sea-imported, and therefore not liable to further interference any where within the Company's territories. He brings this pepper to the North-west frontier line of customs unaccompanied by a *rowannah,* when, as a matter of course, it is seized. The owner urges that he purchased it at Calcutta as a sea-import, and the customs' officer demands proof, which is not forthcoming. The consequence is, that the goods are detained, and the case is reported to the Sudder office, which is often distant a hundred miles from the scene of action. The merchant defending the case urges the same plea, and the native appraiser, who cannot possibly know the difference, is asked his opinion as to whether the article is sea-imported, or country produce. In nine cases out of ten he declares it to be the latter, when the custom collector desirous of discriminating between zeal to Government and justice to the trader, determines upon sending samples of the goods to the custom master at Calcutta: meanwhile, the merchant is told that his property must remain under attachment, or he must deposit a sufficient sum of money to meet a demand for single duty. This latter alternative he gladly accepts, considering any sacrifice better than further detention, which usually swells out to fifteen or twenty days.

The samples are, in due course, submitted to the English appraiser in Calcutta, who, possibly knowing nothing of country produce, or at least of the particular produce in question, pronounces the samples to be sea-imported; consequently, the inland custom collector resolves to release the pepper; but the owner is no where to be found, and his money remains in deposit for three months, when, according to the rules of the department, it reverts to Government.

Subsequently the owner on his return trip to the provinces calls to know the fate of his money, and he is told that although the pepper was proved to have been sea-imported, the duty was carried to credit, as he did not claim it within the prescribed period of three months.

The above will shew, without further comments, how materially this branch of commerce is retarded, (and without help) by the frontier customs.*

* I have reason to believe, that this inconvenience is in course of remedy.

Country Produce.

Statement No. 3, exhibits this section of the Cabool trade during the year 1840, and as it is compiled from authentic documents, there can be no doubt of its accuracy. Want of time has not allowed of a comparison with the exports of previous years, but there are the most ample grounds for asserting, that the past has more than quadrupled in quantity and value the exports of former years.

Statements No. 5 and 7, shew the exports during January and February 1841, which have also been abstracted from the custom-house registers. A marked improvement will be observed in these, especially as regards the chief staples, cloths and shoes, more than double of the former, and quintuple of the latter, having been exported during these two months than during the whole of last year. Indigo, which also occupies a prominent station, I have reserved for particular notice hereafter.

Statement No. 10, gives the exports of the past month, (March 1841); this is not included with Nos. 5 and 7, with the view of mentioning that measures were taken in February last at all the custom posts stretching along the outer frontier line, which extends from Kalsie in the Deyrah Dhoon to Goverdhun on the Eastern boundary of the Bhurtpore territory, for the registry not only of all country, but British and foreign produce exported to, and imported from, Cabool; and that, therefore, means are obtained for the faithful record of the operations of each month, and in each article.

From this statement it will be seen, that 92,401 pieces of cloth (linen, silk, and brocades,) valued at Rs. 1,82,064 were carried across the frontier in March, which was considerably more than any other period, and gives evidence of the increasing demand for the productions of British India.

Cloth being the principal staple of commerce in country produce, it may be necessary to state what descriptions of cloth are most desired. The most valuable, and consequently the least in quantity, are kimkhaubs and doputtas, (coloured,) both of which are manufactured at Benares, and yield unusually large returns on re-sale at Cabool. The largest in quantity, but least in value, are Furruckabad chintzes, and Dooab muslins, ghingams, doosooties, and garhas, also Dinapore muslins. These latter are preferred to the indigenous cloth of the

north, as possessing a finer and stronger texture, being mostly woven with English and country thread.

Country shoes, which it will be perceived are exported in large quantities, are manufactured chiefly about, and exported entirely from, Delhi. Indigo, regarding which a distinct notice was reserved, possesses the distinguishing feature of being the only article of trade contained in the statements, which is not conveyed directly by the Cabool *(Vilati)* merchants. It is in the first instance consigned by the Delhi merchants to Amritsir, from whence it finds its way to Cabool. That which is exported across our customs' frontier, is raised at Koorjah in the Alligurh district; but the quantity stated in the statements, is perhaps not one-half of what will be found in the Cabool market, as large quantities have within the last few years been grown in the protected Seikh states* which are beyond our line, and from thence imported into the Punjab, and countries contiguous to it.

There was at first room for doubting the fact, that indigo really found a market at Cabool to the extent alleged, and close inquiry was therefore instituted of the Cabool merchants; the result has proved the correctness of the original information, and the removal of all doubt on this important question may truly be deemed of paramount interest, both to the European who embarks his capital in raising indigo, and the exporter, who will be, in a great measure, rendered independent of the fluctuations of the European market, by the wide field of enterprize opened to him in the vast countries of the north; where, as I have before observed, the beautiful and permanent dye of indigo will always supersede every other, from its being the favourite colour, and applied to the commonest wearing apparel. However, this refers more to a prospective, than a present benefit.

Indigo produced by a European, whether from its superior quality, the result of superior machinery and larger outlay, or enhanced price, cannot for a time compete with the inferior and cheaper material produced by the native manufacturer, for reasons obvious to those

* Munny Majra in Sirhind, a small principality among the states, produces it most extensively, and of the best quality.

acquainted with the purposes to which indigo is applied,* and the low ebb to which the monetary relations of the mass of the people of the north were reduced, immediately previous to the influx of British enterprise and British capital. When the operation of these powerful, and hitherto never-failing propellants to prosperity shall have come into full play, it may reasonably be hoped that articles, whether indigenous to Europe or Asia, of European manufacture, will be consumed in preference to those which are produced from the rude and primitive machinery of India.

The process of manufacture could not fail to produce other than the most inferior quality, especially as boiling is never used. The pieces of Indigo are seldom larger than a sparrow's egg, and yield a very dingy colour compared with that manufactured by Europeans. The average price (wholesale) per maund, is about ninety rupees.

The other articles of export in country produce, with the exception of *Gotah kenarre,* scarcely merit particular mention, as they are so trifling; but it may be reasonably expected, that as the productions of British India become better known, they will be appreciated, therefore more extensively consumed. Already the use of *lac* is being understood, and I am aware of several merchants having carried samples of it with them, that they might regulate the supply by the demand.

Gotah kenaree, (gold and silver tissues,) will, I am assured, in time be extensively sought after. The chief—possibly only—places of manufacture are Lucknow and Delhi; the latter especially.† It is impossible to ascertain precisely the quantity exported, as from its great value, every expedient is resorted to, and it is said successfully, to smuggle it.

As pertinent to this subject, it is worthy of remark, that in 1837, several camel loads of spurious lace were stopped, which were crossing the line, packed in bundles bearing the manufacturing mark of *Moscow.* It had been brought from Cabool, and had been sent to the

* There are yet other reasons which militate against the purchase by Afghans of indigo manufactured in the European method, the principal of which is the compact pressure given by us to the article. This renders necessary the employment of machinery to grind down the dye before the colouring matter can be properly extracted, whereas the friable, uncompact nature of the indigenously manufactured article, admits of its ready solution in water.

† Benares has also, I think, an extensive manufacture of this article.

provinces, with the view of ascertaining whether sale would be obtained for it; since that period no attempt has since been made to force the manufactures of Russia into our markets.

Imports.

Previously to the opening of the Cabool trade by the result of recent political events, exports were greatly disproportioned to imports; the dangers of the route, and other obvious causes, rendering it most unsafe to convey foreign and valuable articles, which could tempt the cupidity of the lawless hordes, inhabiting the countries through which the route lay. The imports were, in consequence, converted into specie, and not, as now, paid for in kind: so that the advantage all lay on the side of Cabool.

In the statements of import trade, only such articles as yield a duty to the British Government are shewn. Of these, the chief is assafœtida, which always meets with ready sale in our provinces. There is perhaps no country in the world where assafœtida is more commonly used than in Hindoostan.

Saffron is in less common use; the price placing it beyond the means of any but the rich, and a preference being given to that which is brought from Calcutta, imported from the Persian Gulph in Arab ships.

Besides the duty-paying staples, fruits, sarsaparilla, salopmisry, lapis lazuli, medicinal drugs, opium, and churrus, comprize the import trade of Cabool. In the margin* is appended a note, shewing the number of camel loads of fruit, amounting to 4,000, which crossed our frontier from November 1838 to April 1839. The operations of this period are shewn in preference to any other, as being the least favourable, in consequence of the military preparations in progress at that period, by which the trade was partially checked; so that there was a falling off of nearly one-fourth in the imports of previous years, and one-tenth of those of 1840.

* Raisins, ... 1774 Camel loads.
Pistachio Nuts, ... 182 ..... ditto.
Monukkas, ... 592 ..... ditto.
Khobaunies, ... 90 ..... ditto.
Pears, ... 108 ..... ditto.
Pomegranates, ... 605 ..... ditto.
Walnuts, ... 14 ..... ditto.
Prunes, ... 71 ..... ditto.
Almonds, ... 379 ..... ditto.
Plumbs, ... 66 ..... ditto.
Grapes, ... 105 ..... ditto.
Figs, ... 14 ..... ditto.

4,000

Fruit is only imported in the cold season.

Mooltan, Bahawalpore, and Soorutgurh, and Bhutneer, (in the Bekaneer states,) mark the route followed by the *Kafilas* before they enter the British possessions. From Bhutneer they come to Sirsa, in the Bhutty territory; whence travelling by Ranea, Hansie, and Rhotuck, they enter Delhi, and then diverge to the several marts of the provinces.

The reason assigned for the *Kafilas* congregating at Delhi is, that by doing so, they avoid the heavy duties imposed at every customs' *chowkey*, which they would have to pass in their progress through Bekaneer, Lohanee, Kanounie, and other foreign states.

The nature of these duties will be judged from the subjoined memorandum.

At Soorutghur, per camel load of fruit, pays a tax of ..	12 annas.
At Bhutneer, the same, ...	12 annas.
Total, Rs.	1 8

This amount of duty is paid by the Cabool merchants to the Bekaneer state, and it is computed that in good average years a revenue of rupees 12,000 is derived from this source; which, at 12 annas per camel load, would shew the average number of camel loads of fruit imported every season into our territories to be 16,000. This tax is levied without distinction as to the quality of the fruit, all paying alike, and when two camels are lightly laden, from their being young or weak, they pay the tax of one proper camel load.

At Naheir, in the Bhekaneer states, an additional duty is levied of, per camel load, ...	Rs.	1	5 0
And at Buhadera, also in the Bekaneer states, a further duty of, per camel load, ...		2	10 0
Making a Total of Rs.		3	15 0

which, added to the duties levied at Lohanee, Kanounie, &c. averaging 1-8 per camel load, shew an aggregate of rupees 5-7 per camel load, which the merchants would have to pay in addition to the tax paid at Soorutgurh and Bhutneer, were they to enter our territories by any other route than Sirsa and Delhi. Of course, no reference is made to the route running through the Khyber Pass, the Punjab, Ferozepore and Loodianah, as the Cabool merchants would at all risks avoid it.

It now remains to offer a few brief general observations, premising as to the character of the Cabool merchants, that they are remarkable for probity and straight-forward dealing, combined with caution and great tact in the art of buying and selling, and that it is so high in the provinces, that credit to any amount is given to them without hesitation. Indeed a striking resemblance in this respect may be traced between them and that remarkable tribe the Brinjarruhs.

After disposing of most of their import wares at Delhi, the merchants proceed to the lower provinces, furnished with bills of exchange from the Delhi merchants on their agents at Cawnpore, Allahabad, Benares, Calcutta, &c. and having laid in a stock of goods suited to the Cabool markets they return to Delhi, and forming a *Kafila,* retrace their way back to Cabool by the same route* they come. They use no other carriage but camels until they reach Allahabad, at which place they leave them, and convey any goods they may have purchased in the lower provinces on hackeries.

Mention was not made in the proper place, that besides the trade carried on *bona fide* by the Cabool merchants, which the statements appended are intended to shew, immense quantities of every kind of goods obtainable at Delhi are consigned to Cabool by the Delhi merchants, through their agents at Amritsir, and advantage is taken of convoys proceeding to Cabool to despatch large consignments.

As a proof of the growing importance of the Cabool trade, it may be mentioned, that an insurance office (Native) has been opened in Delhi, which will assure goods to any amount and value to Cabool.

The regeneration of the town of Sirsa has greatly contributed to the convenience and security of the Cabool merchants. The opening of the navigation of the Indus, and the predominance given thereby to Ferozepore, has certainly abstracted in some measure from the importance of Sirsa, as a grand emporium of traffic. Yet it will always be deemed a valuable *point d'appui* to the northern trade, especially as the superintendent of the Bhutty territory can protect the traders from exactions and vexatious delays on the part of our subordinate customs' officers.

* They usually make trips in the year one and a half.

In conclusion it may be noticed, that the Cabool merchants being totally ignorant of our laws, especially customs, are shamefully imposed upon by a set of law people, who, under the pretence of instructing them how to avoid rendering themselves amenable to our courts, prey upon them in every possible way. It would therefore be very desirable, if the authorities at Delhi were required to direct attention to the interests of the northern trade.*

I am happy to inform you, that since I last wrote, an enterprizing merchant of Delhi, who was formerly an inhabitant of Peshawur and removed to Hindostan with Governor Elphinstone's mission, despatched a small consignment of goods (vide margin) to Yarkund via Subathoo and Lodauk, with the view of ascertaining whether our exports could not be thrown into China by way of Yarkund, which is I believe situated directly on the borders of it. He seems to be very sanguine of success; as he considers that the superiority of our manufactures will always secure for them the preference over those of Russia, with which alone the Yarkund market is now supplied. In a few days I will submit a statement of trade for April, in which I hope to be able to exhibit three or four new exports. Until October or November, however, the trade altogether will be very slack.

Indigo, khimkhaubs, doputtas and long-cloth dyed blue, skins and jewellery.

* Attention has, I believe, been directed to this point.

No. 1.

Statement of Goods exported from and via Delhi to Cabool, during the year 1840, *the same being British Manufactured and Sea Imported via Calcutta.*

Names of Articles.	Quantity.	Estimated value.	Remarks.
British Manufactures, &c.		*Rupees.*	This Statement has been drawn up from information supplied by the Cabool Merchants' Agents in Delhi, and may, possibly, not be correct.
Linen cloth, white, ...	30,000 pieces,	3,15,000	
Chintzes, ...	25,000 ditto,	80,000	
Velvets, ...	400 ditto,	60,000	
Broad cloths, ...	not known,	50,000	
Birmingham & Sheffield-ware cutlery, &c.	ditto,	45,000	
Glass-ware,...	ditto,	15,000	
Gun flints, ...	ditto,	10,000	
Lead, Pewter, &c.	ditto,	1,20,000	
Copper, ...	ditto,	25,000	
Alum, ...	ditto,	20,000	
White lead,...	100 maunds,	8,000	
Total, ...	... ...	7,48,000	
Sea Importations.			
Species, Drugs, &c.	3,300 maunds,	70,000	
Logwood, ...	2,000 ditto,	20,000	
Beetle nuts, ...	500	10,000	
Brimstone, ...	500 ditto,	8,000	
Quicksilver, ...	30 ditto,	5,000	
Red lead.	200 ditto,	15,000	
Vermillion, ...	50 ditto,	6,000	
Sandal wood, ...	200 ditto,	3,000	
Red earth, ...	200 ditto,	1,000	
Total, ...	... ...	1,38,000	
Grand total, ...	... ...	8,86,000	

No. 2.

Statement of Goods imported from Cabool across the N. W. Frontier, during the year 1840. *The same being liable to the Custom Tax.*

Names of Articles.	Quantity.			Value.			Amount of Duty.		
	MDS.	S.	CH.	RS.	AS.	P.	RS.	AS.	P.
Assafœtida, ...	1,652	38	2	1,44,971	3	9	14,496	15	5
Zeerah, Cummin, ..	1,346	16	8	10,275	5	6	770	11	3
Zaffron, Saffron, ..		33	$2\frac{1}{2}$	995	5	0	99	8	6
Gum-mastic, ...	6	31	0	671	6	0	50	6	4
Sumbhoor or Furs...	$118\frac{1}{2}$ pairs.			224	11	8	11	4	0
	Total, ...			1,57,137	15	11	15,423	13	6

No. 3.

Statement of Goods exported to Cabool across the N. W. Frontier, during the year 1840. *The same being Country produce, and liable to the Custom Tax.*

Names of Articles.	Quantity.	Value.			Amount of Duty.		
		RS.	AS.	P.	RS.	AS.	P.
Cloth, ...	26,826 pieces	45,525	1	0	1,372	0	8
Cocoanut oil, ...	20 maunds	280	0	0	20	15	11
Kimkhabs or Brocades, ...	1,633 pieces	39,037	12	0	2,886	5	4
Verdigrease, ...	70 seers 6 chks.	36	8	3	3	10	5
Hides, ...	387	218	0	0	10	14	5
Gotah or lace,.....	595 tolahs	1,312	5	0	65	9	10
Leather Stockings,..	100 pairs	300	0	0	15	0	0
Amber, ...	43 tolahs	129	0	0	9	10	9
Cocoanuts, ...	2,300	92	0	0	4	9	8
Embroidered Goods,	64 pieces	785	2	0	58	14	1
Wax Candles, ...	2 mds. 10 seers	180	0	0	18	0	0
Iron vessels, ...	6 mds.	75	0	0	7	8	0
Beetle nuts, country,	26 mds. 35 seers	215	0	0	16	1	11
Sugar, brown,.....	2 mds. $12\frac{1}{2}$ seers	21	8	0	1	2	6
Large Hooka snakes,	2	20	0	0	1	8	0
Till (Oil seeds,) ..	31 mds. 20 seers	63	0	0	4	11	7
Shoes, ...	474 pairs	1,340	13	0	78	1	6
Mirzapoor Carpets, .	247	827	0	9	62	0	6
Old Brass, ...	2 mds. 10 seers	101	4	0	10	2	0
Iron, ...	41 mds. 30 seers	45	10	0	4	5	10
Ballchud, Spikenard,	1 maund	10	0	0	0	12	0
Red Lead, country,	30 seers	12	0	0	1	3	2
Vermillion,do.....	6 seers	36	0	0	3	9	8
Nutmegs, do.	6 seers	36	0	0	3	9	8
Red Sandal-wood, ..	11 seers	1	10	0	0	1	11
Tuj, (Cassia,).....	$23\frac{1}{4}$ seers	20	9	0	0	8	3
Sulphur, ...	$12\frac{1}{2}$ seers	12	8	0	1	4	0
Doosooty Cloth, ..	2 seers	1	2	0	0	1	5
Indigo, ...	1,989m. 19s. 8c.	2,18,116	9	11	10,905	13	9
Gum, ...	19 mds. 20 seers	136	8	0	10	3	10
	Total,	3,08,985	14	11	15,578	8	7
Total Imports and Exports,	.....	4,66,123	14	10	31,007	6	1

These two Statements are derived from the Custom House Registers, and can therefore be relied on.

No. 4.

Statement of Goods imported from Cabool across the N. W. Frontier, during the month of January 1841, *the same being liable to the Custom Tax.*

Names of Articles.	Quantity.	Value.	Amount of Duty.
		Rs. As. Ps.	*Rs. As. Ps.*
Assafœtida, ...	700 mds. 9 seers.	39,361 2 0	3,996 0 0
Sumbhoor or Furs,	180 pairs, ...	133 10 0	16 10 11
Black zeerah, Nigella, ...	70 mds. 23 seers.	2,752 14 0	217 5 7
Guns, ...	2, ...	20 0 0	4 0 0
	Total, ...	42,267 10 0	4,234 0 6

No. 5.

Statement of Goods, exported to Cabool across the N. W. Frontier, during the month of January 1841, *the same being Country produce, and liable to the Custom Tax.*

Names of Articles.	Quantity.	Value.	Amount of Duty.
		Rs. As. Ps.	*Rs. As. Ps.*
Cloths, ...	987 pieces, ...	1,076 8 10	26 14 8
Kimkhabs or Broeades,... ...	51½ ditto, ...	496 12 10	37 4 3
Lac, shell and stick,	20 seers, ...	4 0 0	0 3 2
Iron goods, ...	9 mds. 23 seers,	88 0 0	8 8 0
Brown sugar, ...	35 seers, ...	4 6 0	0 3 6
Wax candles, ...	2 mds. 10 seers,	180 0 0	18 0 0
Indigo, ...	207 m. 8sr. 6ch.	22,728 15 5	1,136 7 4
Shoes, ...	1,498 pairs, ...	858 12 0	43 8 4
	Total, ...	25,437 7 1	1,271 1 3
Total Imports and Exports, ...		67,705 1 1	5,505 1 9

These two statements are derived from the Custom House Registers, and can be therefore relied on.

No. 6.

Statement of Goods, imported from Cabool and the N. W. Frontier, during the month of February, 1841, *the same being liable to the Custom Tax.*

Names of Articles.	Quantity.	Value.	Amount of Duty.
		Rs. As. Ps.	*Rs. As. Ps.*
Assafœtida, ...	11 mds. 20 seers.	1,150 0 0	115 0 0
	Total, ...	1,150 0 0	115 0 0

No. 7.

Statement of Goods, exported to Cabool across the N. W. Frontier, during the month of February, 1841, *the same being Country produce, and liable to the Custom Tax.*

Names of Articles.	Quantity.	Value.	Amount of Duty.
		Rs. As. Ps.	*Rs. As. Ps.*
Cloth, ...	66,495 pieces,...	89,052 5 10	2,226 10 3
Kimkhab or Brocades, ...	91 pieces, ...	2,334 0 0	175 0 11
Hides, ...	30	150 0 0	7 8 0
Benares Dooputtas,	9 pieces, ...	139 3 0	10 7 0
Wax candles, ...	2 mds. 30 seers,	220 0 0	22 0 0
Iron goods, ...	3 maunds, ...	30 0 0	3 0 0
Shoes, ...	959 pairs, ...	506 4 0	25 5 0
Mirzapoor carpets,	1 md. 15 seers,	41 4 0	3 1 6
Iron wire, ...	2 seers, ...	1 12 0	0 2 10
Tobacco, ...	1 md. 20 seers,	7 8 0	0 6 0
Lac, shell and stick,	2 mds. 11 srs. 8 c.	18 4 3	1 11 4
Embroidered belts,	8	36 0 0	2 11 2
Indigo, ...	424 m. 37 srs. 2 c.	46,798 5 11	2,339 14 5
	Total,	1,39,334 15 0	4,817 14 5
Total Imports and Exports. ...		1,40,484 15 0	4,932 14 5

These two Statements are derived from the Custom House Registers, and can therefore be relied on.

No. 8.

Statement of Goods, exported to Cabool across the N. W. Frontier, during the month of March, 1841, *the same being British manufactured.*

Names of Articles.	Quantity.	Value.	Remarks.
		Rs. As. Ps.	
Long cloth, muslins, &c.	5,255 pieces,	25,859 0 0	

No. 9.

Statement of Goods imported from Cabool across the N. W. Frontier, during the month of March 1841, *the same being liable to the Custom Tax.*

Names of Articles.	Quantity.		Value.	Amount of duty.	Remarks.
	Mds.	*Seers.*	*Rs. As. Ps.*	*Rs. As. Ps*	
Assafœtida.	100	23	9,087 8 0	905 12 0	

No. 10.

Statement of Goods exported to Cabool across the N. W. Frontier, during the month of March, 1841, *the same being Country produce, and liable to the Custom Tax.*

Names of Articles.	Quantity.	Value.	Amount of duty.	Remarks.
		Rs. As. Ps.	*Rs. As. Ps.*	
Cloth pieces, silk and cotton.	91,419 pieces	1,60,805 4 0	2,695 12 3	
Benares doputtas and brocades, &c.	982 do.	21,259 10 3	1,593 10 8	
Indigo, ...	397 mds, 27½ sr.	43,838 5 4	2,191 14 7	
Gotah kenaree,	428 tolahs	1,087 9 6	54 6 1	
Shoes, ...	176 pairs	382 8 0	19 2 0	
Hides, ...	140	84 0 0	4 3 2	
Ivory, ...	35 seers	87 8 0	6 9 0	
Verdigrease, ...	25	59 6 0	5 15 0	
Cocoanuts, ...	1000	40 0 0	2 0 0	
Cassia, ...	7 mds.	245 0 0	6 2 0	
Sugar, ...	2 do, 20 seers	20 0 0	1 0 0	
Total,	.....	2,37,909 3 1	6,580 10 9	
Total Imports and Exports, ...	.....	2,46,996 11 1	7,486 6 9	
Ditto including British linen,	.....	2,72,855 11 1	.....	

Note to Mr. VINCENT TREGEAR'S *Process of taking casts of Coins. vide No.* 110.

I must not omit to observe, that the above process cannot be applied to all coins indiscriminately. Copper and brass coins are sometimes so much oxidated as to be unable to bear any pressure, and therefore would be broken if put in the press; those of gold or silver are seldom endangered; but still the operator must use a little discretion. Care must also be taken not to continue the pressure further than is required for the perfect copy of the coin, as after the latter has sunk to the full depth of the relief, a lateral extension takes place, which will injure it, as I have found by experience.